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THE 70° GENERAL ASSEMBLY  
AND  
INTERNATIONAL SCIENTIFIC CONGRESS  
OF THE WORLD FEDERATION  
OF HYDROTHERAPY AND CLIMATOTHERAPY  
(FEMTEC)

# **“THERMAL CLUSTERS”**

## ***Status, proposals and strategies for health care and local development***

Ischia Porto (Naples, Italy), 15<sup>th</sup> – 20<sup>th</sup> October 2017



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## **PREFACE**

Representatives and experts from 23 countries will participate in the **FEMTEC Congress**, which will take place at **Ischia Porto (Naples) on October 15-20, 2017** on occasion of the **80<sup>th</sup> anniversary of the foundation of the World Federation of Hydrotherapy**, the only trade association accredited with the **World Health Organization**.

The very topical theme is **“Thermal clusters: Present situation, proposals, and strategies for health care and local development”**. According to the definition of the World Health Organization ([www.who.int](http://www.who.int)), a *“health cluster”* is an aggregate of local entities that coordinate with each other to study and define practices and strategies for a specific health sector” (<http://www.who.int/health-cluster/en/>). When such regions feature scientifically acknowledged mineral water sources, their potentials to act in view of improving the quality of life of people are expanded even further. In this case these are referred to as *“health thermal clusters”*. In this respect, environmental, therapeutic, cultural, and anthropological resources act in synergy in view of good health, as well as of local economic development.

The present challenges posed by modern and environmentally advanced society can find a comprehensive response in the resources offered by *“thermal clusters”*, a true heritage of the past that can be experienced with a modern approach. However, this calls for forms of aggregation and organization into a **“system”**, as well as for effective actions by a variety of *“players”* (politicians, administrators, entrepreneurs, companies) at local, national and international level. The **“genius loci”** of the thermal resort obviously needs to be preserved, but inserted into a local integrated vision. This trend is being understood and partly implemented in most European countries that boast a thermal culture and tradition.

**FEMTEC** ([www.femteconline.org](http://www.femteconline.org)), celebrates the **80<sup>th</sup> anniversary** of its foundation this year, and offers its members an opportunity to **meditate on, evaluate, and carry out an operational review of this subject**, which may provide a starting point for the *renaissance* of hydrotherapy in the modern age. The Representatives of outstanding Institutions, including WHO, ESPA, EAPTC, EMA, ISMH and the National Trade Federations will provide their practical input.

The **CME-accredited** Congress will discuss and develop the individual thermal issues dealing specifically with:

- Structure, organization, and management of national and international thermal clusters
- E-learning training for physicians and operators
- Research as a factor for knowledge and information
- The role of thermal patients-users
- Communication
- Traditional and IT marketing
- New technologies and health safety
- Health insurance
- Health tourism

**Brand new**, included in the agenda of the event, **is the session “HOT SPRINGS CHINA DAY”**, where the Chinese Thermal Association (CHTA) will discuss its potentials and service offering to western experts and tour operators. Investments in the tourist sector in China totalled more than 130 billion EUR (+46%) in 2016, and forecasts were tripled for the next three years.

**A poster exhibition** will describe the historical, cultural, and scientific features of hydrotherapy. The Congress is sponsored by the Italian Ministry of Health.



*“Venue selection – the Isle of ISCHIA (<http://www.comuneischia.it/>) – is not only dictated by logistic requirements”, says **Umberto Solimene**, President of FEMTEC, “but also conveys the significance of introducing a unique region in terms of environmental, cultural, and thermal resources, integrated into an unusual geography. We are expected to carry out a hard and proactive work. While we are aware of the challenges, we trust our strengths and the scientific and entrepreneurial value, in view of building a common thermal house.”*

**Pr. Umberto Solimene**  
**FEMTEC President**

## SCIENTIFIC COMMITTEE

**Belaitar A.** (Algeria), **Bonsignori F.** (Italy), **Bulekbaeva S.** (Kazakhstan), **Cantista P.** (Portugal), **Carraturo N.** (Italy), **Costigliola V.** (Belgio), **D'Alessandro G.** (Italy), **Dubois T.** (France), **Ferruzzi A.** (Italy), **Fimiani A.** (Italy), **Fluck I.** (Hungary), **Gigineishvili G.** (Russia), **Gurnari G.** (San Marino), **Inokuma S.** (Japan), **Jannotti Pecci C.** (Italy), **Ledesma Rosa R.** (Cuba), **Maraver Eyzaguirri F.** (Spain), **Menendez F.** (Cuba), **Oueslati R.** (Tunisia), **Oyama M.** (Japan), **Ponikowska I.** (Poland), **Rasker H. J.J.** (Holland), **Razumov A.** (Russia), **Roques Ch.** (France), **Santuari A.** (Italy), **Solimene U.** (Italy), **Surdu O.** (Romania), **Trofimov E.** (Russia), **Veicsteinas A.** (Italy), **Vitale M.** (Italy), **Zhang Y.** (China), **Zorin I.** (Russia)

## ORGANIZING COMMITTEE

**President:** **Fimiani A.** (Terme di Ischia)

**Members:** **Balestrieri G.** (President of "Centre Studies Iasolino" Isle of Ischia), **Castellone L.** (Director S.I.A.N ASL, Naples2 North), **Capaldo S.** (V. President Federalberghi Terme, Rome), **Carraturo N.** (Dir. U.O.P.C., Ischia, Naples2 North) **Carriero G.** (President of tourism section of Industrialists Union of Naples and Councillor of Federterme), **Di Costanzo G.** (President of Asso-Termalists Ischia), **Gurnari G.** (Vice President of FEMTEC)

## SECRETARIAT OF ORGANIZING COMMITTEE

**Chauskaya N.** (Chief Intern. Dept. FEMTEC), **Busato S.** (Focal point of FEMTEC for the World Health Organization - WHO)

## SPONSORS

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## **CONGRESS PROGRAM**

### **15<sup>th</sup> October Sunday**

**08:00-17:00** Arrival of participants in Naples with individual flights or trains; Hospitality Point at the Ports of Beverello and Porta di Massa, organized transfer to the Continental Terme Hotel in Ischia.

### **GRAND HOTEL CONTINENTAL, ISCHIA PORTO**

#### **17:00-20:00 Registration at the Congress**

#### **17:00-20:00**

- Official opening of the 70<sup>th</sup> FEMTEC International Scientific Congress
- Introduction by the President of Region Campania, Vincenzo De Luca
- Welcome addresses by Representatives of the Ministry of Health, Campania Regional Gov. Local Authorities and Leaders of the International Delegations
- Zhang Qi (WHO, Geneva), *Introductory Remarks. The collaboration between WHO and FEMTEC*
- Remember of the Past President FEMTEC G. Ebrard , by Ch. Roques
- Speech of the and Hon. Pres. I. Fluck and President, UMBERTO SOLIMENE

**20:00-22:00 Welcome cocktail-dinner at the Continental Terme Hotel, attended by the local authorities. Traditional Neapolitan music.**

### **16<sup>th</sup> October Monday**

**07:00-08:30** Breakfast in hotel

**08:30-10:30 1<sup>st</sup> THERMAL CLUSTERS: purposes, training criteria, existing entities around the world**

**Chairs: I. Fluck, T. Dubois, P. Cantista, A. Razumov**

1. **P. Cantista (Portugal)**, *The planning “criteria” for a thermal cluster*
2. **C. Jannotti Pecci (Italy)**, *The Italian thermal clusters*
3. **T. Dubois (France)**, *The thermal clusters in France*
4. **O. Surdu (Romania)**, *Development of Romanian Clusters and results in medical balneal tourism*
5. **M. Crecente (Spain)**, *The Thermal heritage of Europe Atlas*
6. **J. Choinowsky (Poland)**, *Cluster in thermal Station-Polish experience in Ciechocinek*
7. **R. Surmanidze, G. Gigineishvili, R. Bakuridze (Georgia)**, *Natural medicinal resources of the autonomous republic of Ajara (Georgia) (mineral water, pellets) and the perspectives in use*
8. **R. Oueslati (Tunisia)**, *The Tunisian thalasso-therapeutic clusters: health & quality*
9. **E. Wuhr (Germany)**, *A health promotion and disease prevention cluster of seven Bavarian Spa*
10. **I. Altbauer (Slovenia)**, *The Slovenian SPAS: a modern health cluster of central Europe*
11. **A. Belaitar (Algeria)**, *The Algerian strategy for the development of thermalism*
12. **O. Akimov (Russia)**, *The thermal cluster of Belokhurika. Strategies and development*
13. **F. Menendez (Cuba)**, *Health Resorts in Cuba. Integration between the medical approach and tourism*
14. **E. Arkhipova (Russia), G. De Angelis (Italy)**, *The Crimean thermal Cluster*
15. **A. Menshov (Russia)**, *The thermal city of Sestrorerks (videofilm)*

**10:30-11:00** Group photo & Coffee break

**11:00-12:45 2<sup>nd</sup> THERMAL CLUSTERS: research, science, and locally integrated economy. The role of Foundations for Thermal Research (First Session)**

**Chairs: Ch. Roques, M. Vitale, S. Bulekbaeva, R. Oueslati**

1. **A. Razumov (Russia)**, *The Science of Thermal medicine: integration between the cure of health and longlife*
2. **Ch. Roques (France)**, *Afreth: activity and program for the development of the French Thermalism*
3. **A. Ferruzzi, M. Vitale (Italy)**, *The Italian Foundation for Thermal Researches, driver for a new scientific approach to the thermal medicine*
4. **F. Maraver (Spain)**, *Science and medical researches in the Spanish thermal system*
5. **I. Ponikowska (Poland)**, *Are the negative effects occurring in the thermal medicine?*
6. **A. Fimiani (Italy)**, *The physical component of thermal water and its interaction with skin receptors. Cross-observational study at Thermae of Ischia*
7. **O. Sorokina (Russia)**, *Thermalism for prevention and treatment of cardiovascular diseases*
8. **N. Veryho (Poland)**, *Application of natural humus water in drinking cure in patients with alcohol dependence-preliminary results*
9. **F. Bonsignori, V. Langella (Italy)**, *Thermal Medicine and aesthetic medicine: interactions and synergies*
10. **G. Gigineishvili (Russia)**, *Arte-therapy in the thermal centers: new way for complementary methods of treatment*

**12:45-13:15** Question and answers

**13:15-13:30**

- **Official opening of the Poster Exhibition: The thermae in the history of human civilization** (*Introductory Remarks by Umberto Solimene*)
- **Presentation of E-Learning Course on “Introduction to Thermal Medicine”** *By Cristiano Crotti*

**13:30-14:30** Buffet lunch at the Continental Terme Hotel

**14:30-16:30** 3<sup>rd</sup> **THERMAL CLUSTERS: research, science, and locally integrated economy. The role of Foundations for Thermal Research (Second Session)**

**Chairs: F. Maraver, O. Surdu, I. Ponikowska, F. Menendez, G. D’Alessandro**

1. **S. Masiero (Italy)**, *The importance of hydrokinesitherapy in rehabilitation of musculoskeletal disability*
2. **S. Bulekbaeva (Kazakhstan)**, *Complex rehabilitation of dysphagia*
3. **S. Capaldo (Italy)**, *New thermaltherapy protocols for improving active ageing*
4. **A. Varricchio, E. Ascione (Italy)**, *The role of inhaled crenotherapy in recurrent pediatric rhino-sinu-otitis*
5. **S. Inokuma (Japan)**, *The effect of carbonated water on peripheral perfusion in comparison to tap water*
6. **N.B. Gubina, O.L. Morozova, G.V. Terenteva (Russia)**, *Medical Rehabilitation and sanatorium treatment of Juvenile idiopathic arthritis (JIA) in the conditions of a children’s local sanatorium*
7. **M. Carbajo, F. Maraver (Spain)**, *Sulphurous mineral water and its peloids. Applications for health*
8. **V.L. Israel, M.B.L. Pardo (Brasil)**, *Thermal hydrotherapy as an environment and field of practice for the physical therapist in Brazil*
9. **I. Paluyanava (Belarus)**, *Health resort treatment in the Republic of Belarus*



10. **T. Masiukovich, A. Gaprindashvili, N. Kakulia, N. Antelava, R. Surmanidze, D. Berashvili, A. Bakuridze (Georgia)**, Study of mineral resources of Adjara (peloids, clays, waters) with the purpose of their application in medical (balneological) and pharmaceutical practice
11. **V. Repts, N. Efimenko, A. Abramtsova (Russia)**, *Analysis of functional levels and temporal characteristics of biological effects of consumption of mineral waters of the Caucasian Mineral waters*
12. **Zh. Daribayev (Kazakhstan)**, *Neurorehabilitation of children: a multidisciplinary integrated approach is essential*
13. **STOTZ K. (Poland)**, *Influence of humus substances on endothelial cells under conditions of hyperglycemia*
14. **N.P. Lavrik, T.V. Strelkova, S.A. Safonova, L.A. Vorobyova, Yu.A. Punanov, V.Yu. Plisetskaya (Russia)**, *Medical rehabilitation organization in pediatric cancer patients*
15. **Kouskoukis K., Tombris S. (Greece)**, *The Hellenic Acad of Thermal Medicine*
16. **Mussayeva K. (Kazakhstan)**, *Improvement of children in a mountain resort in Kazakhstan*
17. **S. Muhabbatova (Republic of Tajikistan)**, *Communal Rehabilitation in Tajikistan*

**16:30-17:00** Coffee break

**17:00-19:00 4<sup>th</sup> THERMAL CLUSTER S: Certifying for competing. A new strength for thermalism from the International Thermal joint-commission. The therapeutic muds case**

**Chairs: N. Carraturo, Belaitar A., S. Masiero, G. Gurnari**

1. **G. Gurnari, A. Manzotti (San Marino)**, *Planning, Business Plan and management control in the thermalism of quality*

2. **V. Khokhov, M. Golub (Russia)**, *The methodological approach to the sanitary-microbiological quality evaluation and safety of medicinal mud application*
3. **N. Carraturo (Italy)**, *From a certificate of quality of thermal muds to the scientific therapeutic evidence*
4. **Ch. Roques (France)**, *Opinion of the French National Academy of Medicine on the requisition of the French government concerning the health risks related to presence of barium and the absence of sanitary control of thermal muds*
5. **V.S. Sevryukova, E.V. Dobryakov, E.A. Ivanova (Russia)**, *Peloidtherapy with Anapa mud at the Sanatorium resort "DILICH": methods, their justification and effectiveness*
6. **E. Minakova (Russia)**, *Crimean The Cluster History of well known Saki area*
7. **G. Gurnari (Italy)**, *Innovation in the technological approach: the challenges of self-monitoring and telecontrol*
8. **S. Ospanova (Kazakhstan)**, *The "safety culture" in organization is the warranty of a successful quality management*
9. **G. Gurnari, V. Elia (Italy)**, *Water is the most studied but still able to surprise us*
10. **W. Terry (France)**, *Aquacert Quality & Safety Management System and Certification: a way to maintain a long-term relationship of trust with clients and health authorities and to develop new international clientele in search of high-quality health destinations*
11. **C. Mazzucchelli (Switzerland)**, *GDPR (General Data Protection Regulation): The mandatory DPO (Data Protection Officer)*
12. **M. De Luca (Italy)**, *GDPR (General Data Protection Regulation): Data protection by design and by default*
13. **G. Micchini (Italy)**, *GDPR (General Data Protection Regulation): Compliance and Cloud BackUp*
14. **E. Cerruti (Italy)**, *Social Network Collaboration with GED, the Smart Working Way*

15. **L. Barbero (Italy)**, *“Self-Reforming Hydrogen Generator”*  
16. **U. Solimene, V. Costigliola (Italy)**, *Proposal of an international Thermal Joint Commission*

**19:00-19:30** Questions and answers

**21:00-22:30** Typical dinner with live music at the Continental Terme Hotel

**10:00-13:00 FOR ESCORTS**

- *Guided visit to the museum of Santa Restituta, patroness of the city of Lacco Ameno and of the whole Isle of Ischia, or visit to the museum of Villa Arbusto.*
- *Tour of the old city centre of Lacco Ameno and opportunity for high-street shopping at shops offering agreed discounts.*

**17<sup>th</sup> October Tuesday**

**08:00-09:00** Breakfast at the hotel

**09:00-11:30 China Hot Spring Day: Introducing the Chinese thermal clusters to Europe**

**Chairs:**

- **Solimene U.** *President of Femtec*
- **Zhang Yue**, *Secretary General Chinese Hot Springs Tourism Association (CHTA)*

**Participants:** Officials Members of Local Government and Leaders from the Hot Springs Thermal Clusters

**11:30-12:00** Coffee break & press conference

**12:00-13:30 Workshop on Integration funds for health and thermal services. Combining sustainability with health promotion.**

**Coordinated by:** A. Fimiani, N. Starzeva, J. Choinowsky, E. Wuhr

1. **A. Santuari (Italy), N. Chaurskaya (Russia)**, *Health Spas services and the role of patients: the experience of EAPTC*
2. **A. Santuari, L. Bertinato (Italy)**, *The role of health insurance funds in the promotion of health spas*
3. **N. Starzeva (Russia)**, *Public and Private Health Insurance in Russian Federation in the field of thermal medicine*
4. **E. Wuhr (Germany)**, *The case: IGM® Lifestyle Program SINOCUR - An Evidence Based Concept of Individual Health Management and Health Education*

General Discussion with Experts of FEMTEC and EAPTC

**13:30-15:00** Buffet lunch at the Continental Terme Hotel

**15:00-17:30**

- **Meeting of the EXECUTIVE COMMITTEE (for Members) and SCIENTIFIC COMMITTEE of EAPTC(European Association Patients and Users of Thermal Centers)**
- **FEMTEC GENERAL ASSEMBLY, Conclusions and awarding of participants**

**17:30-18:00** Coffee break

**18:00-19:00** Free time

**20:00-23:00** Gala dinner with traditional, lounge and house music

**10:00-13:00 FOR ESCORTS**

Visit to the Aragonese Castle in the typical fishermen's village of Ischia Ponte and downtown Ischia Porto with stroll along the main street Corso Vittoria Colonna and opportunity for high-street shopping at shops offering agreed discounts

## **SPEAKERS**

**ABRAMTSOVA A.**, Institute of Balneology, Piatigorsk, Russia

**AKIMOV O.**, General Manager Belokhurika resort Joint Stock Company, Belokhurika, Russia

**ALTBAUER I.**, Managing Director, Slovenia Spas Association, Celje, Slovenia

**ANTELAVA N.**, Tbilisi State Medical University, Tbilisi, Georgia

**ARKHIPOVA E.**, CEO of Campania Pro. Rep. Crimea, Russia

**ASCIONE E.**, Del. Thermalism AIVAS, Naples, Italy

**BAKURIDZE A.**, Tbilisi State Medical University, Tbilisi, Georgia

**BARBERO L.**, Founding member Barbero Engineering, Turin, Italy

**BELAITAR A.**, Medical Chief Thermal Station Chellala, Guelma, Algeria

**BERASHVILI D.**, Tbilisi State Medical University, Tbilisi, Georgia

**BERTINATO L.**, Director Op. Unit. ASL, Verona; Expert for "Cross-Border Health Cooperation", Italy

**BONSIGNORI F.**, V. President EAPTC, Italy

**BULEKBAEVA S.**, Director Nat. Children's Rehabilitation Children's Center, Astana, Kazakhstan

**CAPALDO S.**, Vice-President of Federalberghi Terme, Rome, Italy

**CARBAJO J. M.**, Universidad Complutense, Madrid, Spain

**CARRATURO N.**, Manager of Public Hygiene, Food, Termalism Ischia-Procida ASL NA2Nord, Naples, Italy

**CANTISTA P.**, President of ISMH; University of Porto, Portugal

**CERRUTI E.**, Area Manager Top Consult s.r.l., Turin, Italy

**CHAURSKAYA N.**, President EAPTC, Russian Federation

**CHOJNOWSKI J.**, President of Polish Association of Balneology and Physical Medicine, Poland

**COSTIGLIOLA V.**, President European Medical Association (EMA), Brussels, Belgium

**CRESCENTE M.V.**, Vice President of EHTTA, A Coruna, Spain

**CROTTI C.**, Expert WHO Coll. Center Complementary Medicine, State University of Milan, Italy

**D’ALESSANDRO G.**, Expert in Sport Medicine, Femtec Medical Commission, Zurich, Switzerland

**DARIBAYEV Zh.**, National Children’s Rehab. Center, Astana, Kazakhstan

**DE ANGELIS G.**, Arch., Expert on Thermalism, Gattopardo Hotel, Ischia, Italy

**DE LUCA M.**, Chief Executive Officer e-matika, Ischia, Italy

**DOBRIAKOV P.**, JSC "DiLUCH" - Sanatorium-Resort Complex, the Resort Town of Anapa, Russia

**DUBOIS T.**, President ESPA, Paris, France

**EFIMENKO N.**, Institute of Balneology, Piatigorsk, Russia

**ELIA V.**, Dept. of Chemical Sciences, State Univ."Federico II", Naples, Italy

**FERRUZZI A.**, President Italian Foundation for Thermal Researches, Italy

**FIMIANI A.**, President and Medical Director Terme di Ischia, Italy

**FLUCK I.**, FEMTEC Honorary President

**GAPRINDASHVILI A.**, Tbilisi State Medical University, Tbilisi, Georgia

**GIGINEISHVILI G.**, National Institute of Physical Rehabilitation, Ministry of Health, Russian Federation

**GOLUB M.**, Crimean hydrogeological regime-operating station of the Ministry of resorts and tourism of the Republic of Crimea, Saki, Russia

**GUBINA N.V.**, St. Petersburg State Healthcare Institution "Children's sanatorium Rehabilitation center "Children Dune" St. Petersburg, Russia

**GURNARI G.**, V. President FEMTEC, Pres. Technical Commission FEMTEC, San Marino

**INOKUMA S.**, Director of Department of Allergy and Rheumatic Diseases, Chiba Medical Center, Chiba, Japan

**ISRAEL V.L.**, Dep. Of Prevention and Rehabilitation and Physiotherapy, Course of Physiotherapy, Univ. Curitiba, Paraná, Brazil

**ISSYK T.**, Law & Economy, University ALMU, Astana, Alma Aty, Rep. Kazakhstan

**IVANOVA E.**, JSC "DiLUCH" - Sanatorium-Resort Complex, the Resort Town of Anapa, Russia

**JANNOTTI PECCI C.**, President FEDERTERME, Rome, Italy

**KAKULIA N.**, Tbilisi State Medical University, Tbilisi, Georgia

**KHOKHLOV V.**, Crimean hydrogeological regime-operating station of the Ministry of resorts and tourism of the Republic of Crimea, Saki, Russia

**KOUSKOUKIS K.**, President Hellenic Ac. Thermal Med, Athens, Greece

**LANGELLA V.**, Terme of Petriolo, Siena, Italy

**LAVRIK N.**, Health Resort Center "Solnechnoe", St. Peterburg, Russia

**MANZOTTI A.**, Consulting and Vis. Pr. Univ. LUISS, Rome, Italy

**MARAVER F.**, Director of Medical Hydrology School, Univ. Complutense, Madrid, Spain

**MASIERO S.**, Director Post Graduate School Rehab., State University Padua, Italy

**MASIUKOVICHI T.**, Tbilisi State Medical University, Tbilisi, Georgia

**MAZZUCHELLI C.**, Privacy Officer Poiesis sagl, Maroggia, Switzerland

**MENENDEZ F.**, V. President of FEMTEC, La HABANA, Cuba

**MENSHOV A.**, Director General North West Spa Association, St. Petersburg, Russia

**MICCHINI G.**, Chief Executive Officer Juliet Informatica srl, Genoa, Italy

**MINAKOVA E.**, First Deputy Head of the City Administration of Saki, Russia

**MORER C.**, Medical Hydrology School, Univ. Complutense, Madrid, Spain

**MOROZOVA O.L.**, St. Petersburg State Healthcare Institution "Children's sanatorium Rehabilitation center "Children Dune" St. Petersburg, Russia

**MUHABBATOVA S.**, Head of department of social development and state social guarantee of the Ministry of Health and Social Protection of the Republic of Tajikistan

**MUSSAYEVA K.**, Ministry of Health, RKMH, Rep. Clinic Sanatorium Alatau, Rep. Kazakhstan

**OSPAKOVA S.**, Nat. Rehab. Children's Center, Astana, Kazakhstan

**OUESLATI R.**, Director Dept. Thermalism, Ministry of Health, Tunisia

**PALUYANOVA I.**, Rep. Center for Health Resorts Treat., Minsk, Belarus

**PARDO M.B.**, Dep. of Psychology, Universidade Federal de Sergipe, Brasil

**PLISETSKAYA V. Yu.**, Resort Center "Solnechnoe", St. Peterburg, Russia

**PONIKOWSKA I.**, Chief Dep. Physical Therapy, Copernicus Univ., Poland

**PUNANOV Yu.**, Health Resort Center "Solnechnoe", St. Peterburg, Russia

**RAZUMOV A.**, President NKA, Dir. MSPC Academic, Moscow, Russia

**REPS V.**, Institute of Balneology, Pyatigorsk, Russia

**ROQUES Ch.**, V. President FEMTEC, Prof. Em. Toulouse University, Afreth, France

**SAFONOVA S.**, Health Resort Center "Solnechnoe", St. Peterburg, Russia

**SANTUARI A.**, Secr. General EAPTC, Pr. of International Health and Law, University of Bologna

**SEVRYUKOVA V.**, Medical Chief JSC "DiLUCH" - Sanatorium-Resort Complex, the Resort Town of Anapa, Russia

**SOLIMENE U.**, President FEMTEC, State University of Milan, Italy

**SOROKINA O.**, Dep. Medical Chief, Spa Center "White Nights", St. Peterburg, RF

**STARZEVA N.**, Director National Center of Reab & Med. Hydrology, Ministry of Health, Moscow, Russia



**STOZT K.**, Copernicus Univ., Dept. Pathophysiology, Torun, Poland  
**STRELKOVA T.V.**, Health Resort Center "Solnechnoe", St. Peterburg, Russia  
**SURDU O.**, Ass. Pr. Senior Phys. RMP EPSOLOR, France; Ovidius University, Constanta, Romania  
**SURMANIDZE R.**, Chairman of Doctors' United Scientific Society of Adjara, Georgia  
**TERENTEVA G.V.**, St. Petersburg State Healthcare Institution "Children's sanatorium Rehabilitation center "Children Dune" St. Petersburg, Russia  
**TERRY W.**, President of Aquacert International, Bordeaux, France  
**TOMBRIS S.**, Secr. Gen., Hellenic Academy Ther. Medic., Athens, Greece  
**VARRICCHIO A.**, President of AIVAS, Naples, Italy  
**VERYHO N.**, Medical doctor, Specialist of Balneology, Physical Medicine and Internal Medicine of Department of Balneology and Physical Medicine of Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Torun, Poland  
**VITALE M.**, Scientific Coordinator ForST; State University of Parma, Italy  
**VOROBYOVA L.**, Health Resort Center "Solnechnoe", St. Peterburg, Russia  
**WUHR E.**, Vice Dean of the Faculty of Applied Health Sciences at Deggendorf Institute of Technology, Deggendorf, Bavaria, Germany  
**ZHANG Q.**, Team Coordinator Traditional, Complementary and Integrative Medicine, World Health Organization, Geneva, Switzerland  
**ZHANG Y.**, Secretary General, Chinese Hot Spring Tourism Association (CHTA), Beijing, China  
**ZHAO Y.**, Chinese Hot Spring Tourism Association (CHTA), Beijing, China



## **FITEC-FEMTEC: SOME HISTORICAL REMARKS**

### ***BACKGROUND***

- 1882: Joint formation of the organisation for health resorts, health and medicinal centres located in Germany, the Austro-Hungarian Monarchy and Switzerland
- 1921: London, ISMH
- 1929: ISMH Congress held in Budapest, formation of ILAR (International League against Rheumatism)

Hungarian aspects:

- 1891: Hungarian Association for Balneology
- 1934: Budapest Central Health Resort Committee

“Fédération Internationale des Stations Balnéaires Thermales,  
Climatiques et Maritimes”

7-14 October 1937

Budapest

- Archduke Dr. József Ferenc (Joseph Franz)
- Goal: the formation of a single international organisation holding together all professional fields of health-spa and medicinal issues
- 36 countries, 340 professional participants, 8 international organisations, 22 government delegates,
- 7 October - making acquaintances, sightseeing, hand-over of health resort casino on the Margaret Island

- 8 October - Official opening (Hungarian Academy of Sciences) hand-over of the drinking hall of Lukács Bath
- 9 October - Academic meetings (Hotel Gellért)
- 10 October - Visiting the Balatonfüred climatic health resort
- 11 October - Academic meetings (Hotel Gellért)

#### Foundation of the International Federation

- 12 October: lectures and closing ceremony (Hungarian Academy of Sciences)
- 13-14 October: Visiting health resorts in the country

### ***C O N G R E S S E S***

- 22-28 September 1938 Berlin and Bad Nauheim
- 5-10 June 1939, Liège
- 1940, Paris (cancelled)
- 1942, Rome (cancelled)
- 8-12 January 1944, Bratislava-Piestany
- 26 July 1947, foundation of FITEC

#### **FITEC congresses in Hungary**

- 5-10 October 1975, Budapest
- 3-9 October 1982, Budapest-Health resorts: Balatonfüred, Hévíz, Sopron
- 27 October - 1 November 1996, Health resorts: Bük, Hévíz, Budapest
- 26-30 November 2003, Budapest

Ladies and Gentlemen, Dear Colleagues,

The foundation of the legal successor of FEMTEC in Budapest was achieved as a result of a lot of work and efforts in the year 1937. This can be fully illustrated only if we reach back to the roots.

The first international medical spa organisation was established in 1883; with the participation of Germany, the Austro-Hungarian Monarchy and Switzerland, which ceased operation at the beginning of the First World War. (Verein der Kurorte und Mineralquelleninteressenten Deutschlands, Österreich-Ungarns und der Schweiz)

The new international organisation the ISMH (International Society of Medical Hydrology) addressing exclusively issues of medicine was set up after the world war in London on 9 December 1921. The Hungarian professor Sándor Korányi was appointed chairman of the organisation at the ISMH congress held in Budapest in the year 1929. The establishment of ILAR, (International League against Rheumatism) a scientific organisation that is still very active to this day, was announced at the same congress.

The Hungarian Association of Balneology was founded in Budapest in the year 1891 and already laid down in its statute whereby it intends to deal not only with medical but also with all other issues related to health resorts; from legal, technical, education and training etc. aspects

Further rapid development started in the field of baths in Hungary in the 1920-s and 30-s, principally in Budapest. The central Health Resort Directorate formed in Budapest had information and sales offices opened in 32 towns abroad. Archduke Dr. József Ferenc (Joseph Franz), who had a degree in both law and economics, was appointed chairman of this organisation.

Demand for the establishment of an international organisation alongside ISMH that in addition to medical activities would deal with

all areas of health spa issues was becoming increasingly widespread in Europe in the following years.

Upon the initiative of József Ferenc in the spring of 1937, the Hungarian experts and authorities contacted the national spa associations and official organs of various countries with the recommendation to hold a health spa congress in Budapest in the autumn of the same year, where an international health spa association could be established. The proposal was very well received.

At the congress held 7-14 October 1937 in addition to 32 European countries Egypt, USA, Japan and Chile were also represented. The number of active participants was 340. Alongside the professional participants, government delegates represented another 22 countries, and those present included representatives of 8 international organisations, among them the League of Nations, International Labour Organisation (ILO) and the International Hospital Organisation as well.

The program of the congress on 7 October started with a reception where participants were offered the possibility to get to know each other, then they were invited to a joint lunch followed by a Budapest sightseeing.

The ceremonial opening of the official program took place at the Hungarian Academy of Sciences in the morning of 8 October. This was followed by the visit of the Lukács Spa and the hand-over of the new medicinal water drinking hall. Scientific lectures were held in the afternoon. The Gellért hosted a train of lectures on 9 October till late in the afternoon on Saturday, and the day was rounded off by a dinner given by the mayor. The participants travelled to Balatonfüred, the climatic health resort at lake Balaton, on 10<sup>th</sup> by a special train. Monday (11 October) was entirely dedicated to scientific meetings. The Fédération Internationale des Stations Balnéaires Thermales, Climatiques et Maritimes, (in German

Internationale Vereinigung von Heilbädern, Klimakurorte und Seebädern) was established in the late afternoon.

The scientific works were pursued in three committees:

- Medical
- economy, tourism and law
- technical

The lectures addressed the professional conditions of health spa treatments, the design and organisation of health spa facilities, the social role of spas, advertising, avoiding seasonality and several other issues.

The aforesaid inception of the International Federation took place at 6 p.m. on 11 October in the concert hall of Hotel Gellért. C. Verhaegen de Neyer submitted a proposal for resolution on behalf of the Belgian Royal Government at the meeting for the congress to declare the formation of the international spa federation, subject to the seat of the organisation being Budapest. The head of the German delegation, Prof. Dr. H. Vogt supported the proposal as follows:

*“ ...Not a single town would have more right to claim to be the seat than Budapest, which enjoying nature’s lavish generosity offers medicinal waters of excellent effects and unparalleled natural beauties, in addition to which the high level of medical capability of Budapest and the excellent equipment and facilities of its health institutions as well as the top standards of scientific research make it worthy to be the centre of managing international health-spa issues ...”*

Following several supporting comments, participants of the congress unanimously declared the formation of the international federation and elected Dr. József Ferencto be chairman, and Dr. Zoltán Szviesényi, the chairman of the organisation committee to be secretary general.

The closing ceremony of the congress was held in the morning of 12 October in the congress hall of the Hungarian Academy of Sciences.

News about the congress was carried by more than 80 foreign magazines and dailies.

Congress II. of the federation was held in Berlin and Bad Nauheim between 22 – 28 September 1938. The major issues among others covered: analyses of the final text of the statutes, comparison of health-spa issue related legal provisions of member states, examining the possibilities of standardising pricing. The Technical Committee was investigating the ways of protection against the material damaging effects of aggressive waters, respectively the possible utilisation of the energy of high temperature waters for heating.

The Federation held an extraordinary congress in Liège Belgium on 5-10 June 1939, in connection to the International Water Exhibition. This time in addition to the host Belgium, only 7 European countries took part.

In 1940 the congress that was planned to be held in Paris failed due to acts of the war.

In 1942 the Italian congress and delegates general meeting was first postponed to October 1943 also due to the war. However, this congress also failed because of the war.

The last congress of the Fédération Internationale des Stations Balnéaires, Climatiques et Maritimes was held in Bratislava and Piestany (Slovakia) in January 1944 where only Bulgaria, Croatia, Hungary, Germany, Italy, Romania and Slovakia attended. Those present raised the necessity of publishing a medical book that would list the health-spa resorts of member states and set forth the indications and contraindications of the treatments offered there. The proposal remained abort of course.



The war reached Central-Europe by the Spring of 1944 as well. Albeit the Federation did not declare its termination it ceased operation.

Three years later the need for the revival of the federation was raised by participants at an international health spa conference held in Prague in 1947, which was realised in the same year in Switzerland on 26 July, and thus the FITEC was established.

***Pr. Istvan Fluck (Hungary)***  
**Honorary President of FEMTEC**



# **ABSTRACTS**

## STUDY OF MODIFIED MINERAL WATER INFLUENCE ON FUNCTIONAL STATE OF THYROID GLAND

**ABRAMTSOVA A., SAGRADYAN G.V., TOVBUSHENKO T.M., REPS V.F.**

FSBI "Pyatigorsk Research Institute of Curortology of the Federal Medico-Biological Agency", Russia

Selenoproteins participate in the regulation of many systems associated with development and growth in ontogeny, the intensity of metabolic processes, the reproductive function of the body, antioxidant control and DNA repair. The level of selenium in the body is determined by the selenium status of the region, i.e. its content in food and water. In natural mineral waters selenium is seldom found, on the CMW territory it is found in highly mineralized waters, which limits its use in most diseases. In connection with this, it is important to conduct studies on the effect of low-mineralized enriched mineral water enriched with selenium on certain regulatory and metabolic systems.

**The objective.** To study the effect of the Pyatigorsk source mineral water (low-carbon sulphate-hydrocarbonate-chloride calcium-sodium sulphate-hydrocarbonate) modified by nanoparticles of selenium mineral water and biochemical parameters in serum in healthy animals on the content of thyroid hormones, insulin, cortisol and dehydroepiandrosterone.

**Methods of the research.** After a course rats intake (Wistar, n = 58, 3 months, weighing 200-220 g) of mineral water of the Pyatigorsk source modified by selenium nanoparticles in two ways (by the method of free and intragastric administration) in the blood serum of animals using the enzyme immunoassay on ChemWell biochemical analyzer the content of thyroxin (T4), triiodothyronine (T3), dehydroepiandrosterone (DHEA), cortisol and insulin, glucose,

total protein, total cholesterol, triglycerides and alkaline phosphatase is determined.

**Results.** The course use of mineral water modified by selenium nanoparticles by both methods led to unidirectional influence on the level of thyroid hormones in the peripheral blood of animals, the thyroxin (T4) increased by 1.5-1.8 times and triiodothyronine decreased by 1.3-1.5 times, the tendency to an increase in insulin and total protein in the blood was noted. In contrast to the control and other experimental groups with intragastric analysis, the correlation analysis revealed the presence of a "chain" of intersystemic functional connections in the content of hormones and substrates in the blood: a direct relationship between the T4 level and the total cholesterol content ( $r = + 0.7$ ,  $p = 0.03$ ), the inverse relationship between cortisol and total cholesterol ( $r = - 0.7$ ,  $p = 0.02$ ), a direct relationship between triglycerides and cortisol ( $r = 0.8$ ,  $p = 0.001$ ), in turn triglycerides are in inverse correlation with the body mass ( $r = - 0.7$ ,  $p = 0.02$ ), and the body weight positively correlates with the content insulin in animal blood ( $r = + 0,6$ ;  $p = 0.05$ ).

Thus, the course application of the mineral water of the Pyatigorsk source, modified with selenium nanoparticles, promotes the activation of the functional state of the thyroid gland with a change in the direction of intersystem regulatory interrelations in the regulation of lipid metabolism.

## **ORGANIZATION AND MEDICAL REHABILITATION MANAGEMENT IN THE SYSTEM OF HEALTH RESORTS OF RUSSIA: HISTORY, TRADITIONS AND INNOVATION**

**ADZHIENKO V.L., REPS V.F., SLATVINSKAYA E.A.**

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Sanatorium-and-health resort service of Russia has proved its medical and economic efficiency in the system of medical rehabilitation and health improvement of Russian people for decades. Natural medical factors favourably differ in safety, availability, dosage simplicity, absence of by-effects and immunity to the action of disorder agents. More humane, social and scientifically progressive principles are the basis of sanatorium-and-health resort treatment: preventive and rehabilitation trend, succession between out-patient and diagnostic, hospital and sanatorium institutions, high specialization of the administered treatment.

The history of formation and development of health resort business in Russia is more than 200 years old. During historically long stage of formation and development of the oldest resort region of Russia – the Caucasian Mineral Waters region (CMW) there have been created traditions and standards of leisure activities and health improvement of Russian people in the resort.

Recreational activity in CMW had a seasonal character and a different duration in various resorts. The duration rated from 1-2 to 3-4 months. Recreational course was divided into two stages: the first – the treatment itself that included baths with mineral water (1-2 times a day), mineral water intake (up to 10 and more glasses), walks and the second – medical-recreational that includes less treatment and increase of entertainment and recreational activities.

Each of the periods of recreational course was in different health resorts of the CMW region. This way of recreational activity of the patients in the area of several resorts that were consequently included in recreational course was determined as polyterritorial rhythm of recreational activity.

At the beginning of the 20<sup>th</sup> century the nature of territorial organization of recreational activity of the patients changed and became monoterritorial that is each resort of the region should have a particular treatment profile which is based on the specific features of natural climatic and hydro-mineral resources of each health resort. At present Caucasian Mineral Waters region is a nationwide centre of balneology and sanatorium-resort treatment. Hydro-mineral springs, climatic conditions, sanatoria and boarding houses are some kind of a «supporting frame» of the tourist-recreational regional complex. The worked out infrastructure, available human resources and natural ecological conditions is a competitive condition, a factor of stable recreation functioning.

The significance of sanatorium-resort treatment is caused by continuing premature aging process and a high level of morbidity rate of adult population, teenagers and children. Numerous researches showed that regular health improvement in spa conditions allows to reduce a number of acute exacerbation of chronic diseases by 4 times, to decrease temporary and resistant disability by 2,5 , to reduce hospitalization requirement by 2,4 times, to cut down medical expenses in policlinics and hospitals by 3 times, to reduce payments for temporary incapacity to work by 2,2 times. The expenses made at a sanatorium stage of rehabilitation of patients and victims of traffic accidents compensate themselves by 3 times, and after treatment costs of post infarction patients by 7 times.

At present stage medical rehabilitation is carried out both traditionally basing on sanatorium-and-resort treatment and in innovative direction basing on preventive medicine in structure of

health tourism. In this view, resort treatment and health tourism should be considered as an important national objective of increase in level of national health. In balneological view, primary wellness tourism is a kind of sanatorium-and-resort treatment and considers organization of population health improvement as a technology of travelling. It is reached by formation of a tourist product at the basis of which you can observe a medical or recovering technology that improves life quality by complete satisfaction in demand for rest and health improvement.

At the market of health resort services economic effectiveness is concentrated not only on the price but on such non-cost factors as the quality of the service, trading conditions and advertising. It should be taken into consideration that in the system of organization of sanatorium-and-resort service there are conditions of free admission and free exit. There are some limits of the entrance connected with the established track record of the service producers and demands in license trade and certification. In other countries staff training for this sphere get education at schools, tourism and medical institutions. Successful supervision of sanatorium-and-resort business in Russia in modern economic and social cultural conditions demands specialists training in organization of medical rehabilitation on different levels of rehabilitation starting from the doctor of outpatient clinic to organization of rehabilitation process in medical and preventive treatment institutions of the country – sanatoria, health centers of spa hotels. We think that this trend should be priority in medical universities in terms of branch “Management”.



## **THE SLOVENIAN SPAS: A MODERN HEALTH CLUSTER OF CENTRAL EUROPE**

### **ALTBAUER I.**

Slovenian Spas Association

The natural therapeutic effects of thermal water, the beneficial effect of sea and mountain climates with aerosols, salt water and saltpan mud, therapeutic peloids and peat are the medicinal substances that can be found in abundance in Slovenian nature and that form the basis for the operation of 15 Slovenian spas and natural health resorts. In addition to a wide range of saunas, massages, personal care and health treatments, Slovenian health resorts also offer many specialties due to the various climate features. The development and establishment of Slovenian health resorts were possible due to the abundance of untouched natural riches of our country. The most significant are thermal water with its various characteristics and different temperatures (from 32 to 73 degrees Celsius) and mineral water (world-renowned Radenska Tri Srca and Donat Mg water), followed by sea water and salt water (acqua madre from the salt pans), organic and inorganic peloids as well as maritime, Pannonian and Pre-Alpine mountain microclimates. Health care services in health resorts include preventive care and specialist in-clinic and hospital rehabilitation with the help of natural medicinal remedies. These health resort services rely on the acknowledged therapeutic properties of natural medicinal remedies, which are used for particular conditions. The scientific basis for health resort treatment lies in balneology which is one of the oldest interdisciplinary medical sciences. Even though doctors in health resorts have already specialized in their field of expertise, they must also be somewhat proficient in the field of balneology. Health care services performed at Slovenian natural

health resorts are based on the long-standing tradition of using natural medicinal remedies and rehabilitation to help in the process of medical treatment. They rely on the experience, practical work, and empirical research results concerning the therapeutic effects of natural medicinal remedies. All natural healing agents must be clinically tested beforehand, and their medicinal properties must be proven and any contraindications arising from their use must be defined. The use of natural medicinal remedies enabled health resorts to specialize in treating particular illnesses, dysfunctions, and disabilities. Health resorts heal by using various natural remedies, such as drinking regimens, mineral and thermal baths, mud therapy, salt-water therapy, CO<sub>2</sub> baths, and herbal therapy. In addition to natural medicinal remedies, health resorts also developed the majority of the known forms of treatment in the field of physical medicine and rehabilitation. In the past one hundred years, Slovenian natural health resorts established in locations with sources of mineral and thermal water have become the go-to places for modern rehabilitation of post-operative patients as well as patients with some chronic diseases. In addition to the use of natural healing agents, the patients are also offered methods used within medical rehabilitation, occupational therapy, and psychotherapy. Rehabilitation is monitored by qualified specialized experts from various fields who, in some medical rehabilitation centers, also perform modern diagnostic testing. Medical rehabilitation in Slovenian natural health resorts offers a holistic approach to patients, and the objective of the treatment is a prompt return of patients recovering from serious illnesses or operations into active life as well as alleviating symptoms of patients with chronic illnesses. People living near the sources of Slovenian healing waters have attempted to discover the secrets of human well-being in the past. Excavations from the times of the Roman Empire, written documents concerning thermal water dating all the way back to 1147, and the therapeutic properties of our

mineral water which has been acknowledged in Europe for more than four centuries speak of the rich culture of thermal water therapy in this area. Being at a crossroads of paths leading from north to south and from east to west, Slovenia has always been a part of the culture of the Old World. During the renaissance of central European health resorts, health resorts that to this day form the foundation of health resort tourism in Slovenia were established. These health resorts also maintained a special status in Slovenia's health care system as well as a strong bond with the medical field due to the therapeutic properties of natural medicinal agents. Slovenian health resorts thus harmoniously balance wisdom, experience, the natural environment, and the characteristics of the land with the friendliness of the hosts. For this reason, this mosaic of health and well-being offers everyone anything they truly want or need.

## **STUDY OF HYDROMINERAL RESOURCES (WATERS) OF ADJARA REGION WITH THE PURPOSE OF THEIR APPLICATION IN BALNEOLOGICAL PRACTICE**

**BAKURIDZE A., MASIUKOVICHI T., GAPRINDASHVILI A., BAKURIDZE L., BAKURIDZE K., SURMANIDZE R., BERASHVILI D.**

Tbilisi State Medical University, Georgia

The unique consumer properties of Georgian mineral waters are widely recognized, their application is recommended for everyone who has or has not health problems, for food digestion problems, skin diseases etc.

Georgia is rich in water resources: the amount of water flow is 820 000 tones at 1 km<sup>2</sup>, which is 2.5 times more compared with the world's average amount. The country's water supply is 56.5 km<sup>3</sup>/per year. The 33% of water resources are ground, high quality drinking waters. In case of doubling the number of the Georgian population, when the total demand increases and will be 10 million m<sup>3</sup>/per day, the excess resources enables to be bottled and realized tens of billions liters of drinking and medicinal water every day.

There are about 400 resorts in Georgia. They are of two types: balneological and climatic. Several decades ago the scientists of Geology field were interested in the mineral waters resources of Georgia, nowadays mostly businessmen are interested in discovery of mineral sources and restoring balneological resorts in net marketing point of view.

At present it is necessary to make the in-depth study and research in scientific levels of mineral waters. There are all conditions, that our country took the leading place in the issues of hydrochemical, hydrogeological and balneological studies. We should take care of the main resorts of the country and more widely reveal the

hydromineral resources. Currently, the monitoring character studies of mineral waters are systematically going on.

The aim of the research was to study the mineral waters of Adjara region with the purpose of their application in medical and pharmaceutical practices.

By using the modern instrumental methods of analysis the chemical compositions (micro- and macro-elements) of 38 mineral waters of Adjara region have been studied.

On the basis of the chemical research, the contents of balneological components have been confirmed in the study objects.

It has been revealed, that Danisparauli bath water contains hydrocarbonate at high quantities. The pH of the water is 6.49. Flavoring properties of water is acidic, which is conditioned by free carbonic acid. At the same time the water contains at high quantities the elements with high biological value: Calcium (100.2 mg/dm<sup>3</sup>) and Magnesium (499.92 mg/dm<sup>3</sup>). Except for that, it is rather hard water and belongs to mineral waters, dry residue is 3408.0 mg/dm<sup>3</sup>.

It has been also established that the mineral water Shubani significantly stimulates the acid- and enzyme-producing function of stomach, while not affecting the peripheral blood composition. It stimulates the synthesis and release of bile acids, bilirubin secretion, cholesterol excretion with the bile and increases a cholate-cholesterol coefficient. By loading of body weight by 2% (one-time) the water mildly reduces the secretion of bile and bilirubin.

## **SELF-REFORMING HYDROGEN GENERATOR**

### **BARBERO L.**

Barbero Engineering, Turin, Italy

#### **G.I.S.R. GENERATOR**

G.I.S.R. means: Self Reforming Hydrogen Generator with nano-galvanic reactions that use very high spreading materials, therefore with very low cost of availability, extraction, processing and delivery.

The raw materials, nano-structured, can be found anywhere in the 'short chain', so low cost and low environmental impact.

The new "high-technology" is based on the considerable savings on hydrogen production costs, which occur through the subdivision and / or recombination of the water molecule (including sea water), using nano-galvanic reactions endogenous to the molecule of water (H<sub>2</sub>O) through the use of some nano-structured metals, without the use of electricity, with obviously low production costs compared to electrochemical reactions.

The GISR generator, for both HYDROGEN (H<sub>2</sub>) and DI-HYDROGEN (2H<sub>2</sub>), OXIDROGEN (2H<sub>2</sub>-O<sub>2</sub>) and OXYGEN (O<sub>2</sub>) production in SELF-REFORMING mode, by nano-galvanic reactions (redox reversible), represents the new frontiers for cleaning, purification and distillation of water.

GISR does not emit pollutants, nor atmospheric, nor even as radioactive residues fixed, and at the same time shows the lowest cost in generating the hydrogen and its derivatives.

## **ALGERIAN STRATEGY OF DEVELOPMENT IN THERMALISM**

### **BELAITAR A.**

Hammam Chellala Thermal Center

#### **HISTORICAL REVIEW:**

the history of the use of warm waters for curative and fitness in Algeria, dates back to the Roman era; due to the presence of Roman sites and remains in the vicinity of natural hot springs.

the beginning of the 18th century saw the coming of the French conquest in my country, where the multidisciplinary military genius (architect, topographer, doctor ...) had the task of identifying and renovating the thermal sites and finally building of the reception centers around these thermal spas.

#### **ALGERIAN THERMALISM DEVELOPMENT STRATEGY:**

the beginning of the 20th century (1962: independence of Algeria) saw the establishment by the Algerian State of a program of realization of 07 health spas medicalized throughout the north of the country with all the necessary means for the good care for the sick.

Since 2010, and in view of the degradation and the oldness of the thermal establishments, a new strategy has been implemented for the modernization of these health centers and the upgrading of all staff working in close collaboration with the FEMTEC.

## **THERMAL MEDICINE AND AESTHETIC MEDICINE, INTERACTIONS AND SYNERGIES**

### **BONSIGNORI F.**

Vice President of European Association of Patients and Users of thermal centers

### **LANGELLA V.**

Dep. Aesthetic Medicine Petriolo thermal spa

The relationship between thermal medicine and aesthetic medicine is obvious, just think of some beneficial effects of thermal treatments such as action on the skin, like tissue mineral rebalance, hydration and stimulation of the microcirculation with better oxygenation. Very important are the systemic action with macrocircle improvement and direct and indirect endocrine modulation.

In addition, the two disciplines have common indications and are complementary in the treatment of many pathologies, particularly in the phlebopathic and dermatological diseases including the most common blemishes. We can say that, in some cases, there is a genuine synergy of action.

The Authors have prepared specific protocols that take advantage of the combined action of aesthetic medicine and thermal medicine. In this study is highlighted the treatment of cellulitis or PFES. The protocol's application also includes a study involving the recruitment of female patients aged 40 to 65 years. In addition to the direct action of the treatments, it is possible to address the possible risk factors present, also altering lifestyles. The treatment consists of the use of carbon dioxide therapy combined with various balneotherapy techniques, in salsobromoiodic thermal water.

Despite the validity of theoretical bases and clinical evidence, scientific studies and validations on synergies between the two



disciplines are still very poor. For this reason it is absolutely necessary to increase the studies that we have solid scientific bases.

## **COMPLEX REHABILITATION OF DYSPHAGIA**

### **BULEKBAYEVA S.**

National Children's Rehabilitation Center, Astana, Kazakhstan

In this presentation author describes the problems of dysphagia among patients with the pathologies of nervous system. In detail is described main aspects of dysphagia. In their work authors pay attention to the nutrition issues: what patients can eat; is it possible to chew; the process of swallowing and choking; kind of food which patient can swallow better; drinking processes; what kind of posture should patient take, so that he does not choke; the ability of eating independently; the ability of using cutlery. Swallowing disorders can take place in case:

- disorders of the innervation of IX, X, XII pairs of cranial nerves;
- muscular tension of the oral-pharyngeal system;
- sensitive sphere changes;
- anatomical abnormalities.

The nurse plays a key role in assessing the nutrition and hydration of the patient. She collects an anamnesis according to his habitual diet. In practice, a standardized assessment of nutrition and swallowing disorders is used. All patients undergo a screening test of the swallowing function.

Algorithm of nutrition status:

- evaluation of swallowing function
- selection of the pose for the most effective and safe swallowing
- if swallowing is difficult: feeding is done only in the patient's sitting position
- selection of the consistency of food and liquids.

Basic provisions used to eliminate swallowing disorders:

- normalization of muscle tone; -standardization of body position and selection of compensatory movements;
- setting the correct consistency of food;
- attempts to teach proper oral nutrition.

Selecting the position of the body:

- head position neutral, with a slight inclination forward;
- symmetrical and stooped shoulders;
- symmetrical arrangement of the trunk;
- stable, symmetrical pelvis (90 °);
- hips in neutral position;
- symmetrical, stable feet on the surface.

Control oral cavity:

- help teach the child to suck, swallow, eat from a spoon, chew hard food and drink from a cup;

In the case of insufficient oral muscular activity, the jaw of the child is controlled during nutrition.

## **THE PLANNING “CRITERIA” FOR A THERMAL CLUSTER**

### **CANTISTA P.**

ISMH President, University of Porto, Portugal

In our days thermal clusters seem to act as key organizations to help the development of all the economic activity of this particular field of health tourism. In fact the integrated contribution of different organizations from multiple areas of interest and vocations, with the involvement of an enormous variety of professionals with great experience and competence in their particular jobs has a high relevance for this development.

In our presentation we express our perspective about how to plan and implement a thermal cluster in order to define practices and strategies to facilitate an optimal management of mineral water natural resources promoting health, science, culture, environment, local employment, economy and quality of life.

Thermal clusters proposed measures may have several levels of implementation. They may be applied both on a local or general level; in a regional, national or international plan. They also may target different markets, ages, publics.

We underline the relevance of Medical Hydrology and Thermal Medicine in thermal clusters. Education, research and good practice are their main contributions to optimize the health benefits of natural mineral water, steam gases and peloids for our populations. By treating many chronic conditions and promoting health education and health behaviour thermal resorts may play a very important role in National Health Services.

Within this perspective thermal clusters should be related simultaneously to Health and Economy ministries. There are some good examples and experiences of this.

Finally we conclude for the perfect fitting of these ideas with our so called AQUANET project, showing how they cope so well and pointing possible actions and ways to establish a consistent reality in a near future.

## **SULPHUROUS MINERAL WATER AND ITS PELOIDS. APPLICATIONS FOR HEALTH**

### **CARBAJO J.M.**

UCM Group - Medical Hydrology, Faculty of Medicine, Complutense University of Madrid, Spain

### **MARAVÉ F.**

UCM Group - Medical Hydrology and Professional School of Medical Hydrology, Faculty of Medicine, Complutense University of Madrid, Spain

In recent years it has made huge progress understanding the capacity of hydrogen sulfide as a gasotransmitters. Its biochemistry allows us to glimpse new therapeutic possibilities of the sulphurous mineral waters, hitherto unknown, and confirm current knowledge. It has been reported that sulphurous mineral waters is able to be absorbed through the skin causing vasodilation, analgesia, inhibition of the immune response and keratolytic effects which reduce skin desquamation. Furthermore, bactericides or antifungal properties with dermatological utility have been described. Thermal sulfurous water exerts beneficial anti-inflammatory, keratoplastic, and antipruriginous effects.

A vast research effort is being devoted to the hydrogen sulphide molecule. So far, results indicate it has beneficial effects when present in mineral waters, sulphurous peloids or in muds made from mineral sulphurous water.

New therapeutic possibilities of sulphur mineral waters are described. Topical treatments go beyond the skin and are starting to show benefits for pulmonary hypertension, arterial hypertension, atherosclerosis, ischemia-reperfusion injury, heart failure, peptic ulcer and acute and chronic inflammatory diseases.

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## **SOCIAL NETWORK COLLABORATION WITH GED, THE SMART WORKING WAY**

**CERRUTI E.**

Area Manager Top Consult s.r.l., Turin, Italy

Today, everyone has a smart device. You can find an App for almost anything.

“Social” logics came into our lives and influence it grandly.

What is the reason of their success? They are easy, fast and always there.

But when it comes to managing Companies, we use tools that have been there for 30 years.

Today we have technology and regulations to change. Run with us the last mile, towards Digital Transformation, towards a new way of working.



## **CLUSTER IN THERMAL STATION. POLISH EXPERIENCE IN CIECHOCINEK**

### **CHOJNOWSKI J.**

Department Balneology and Physical Medicine Collegium Medicum Nicolaus Copernicus University Torun, Poland

The aim of the lecture is to present the principles of cluster functioning in thermal center on the example of Ciechocinek. Cluster "Valley of health" brings together entities operating in Ciechocinek, which is a thermal center with unique natural resources and a recognized position in thermal treatment. The spa cluster includes social, public and commercial entities. All entities are focused on common goals aimed at the harmonious development of the spa resort.

These goals include:

- Developed, used and monitored dialogue and partnership procedures with representatives of local communities,
- Developed, implemented and monitored business support instruments (business),
- plan of the strategic planning process,
- comparative analysis of trends concerning thermal center function,
- Planning and implementation of social and marketing research,
- Developed and implemented brand strategy of the thermal center,
- development plan, including for thermal center.

At the lecture, the mechanisms for creating and operating the cluster will be discussed, global benefits for the thermal resort and individual entities operating within the structure.

## **THE THERMAL HERITAGE OF EUROPE ATLAS**

### **CRECENTE MASEDA J.M.**

“European Historic Thermal Towns Association”, EHTTA Secretary's Office  
City of Acqui Terme Tourist Board, Acqui Terme (AL), Italy

The Thermal Heritage of Europe Atlas is an initiative for the study and dissemination of the Thermal Heritage of Europe. This initiative was born in the Scientific Committee of the European Historic Thermal Towns Association and the European Route of Historical Thermal Towns. The project has been developed by a multidisciplinary team of experts in thermalism, heritage, landscape, urbanism and tourism.

This database is structured in a Geographic Information System and organized around 15 categories (municipality, springs, fountains, spas, hotels, villas, leisure, landscape, services, industry, research, immaterial, events, image and tourism). The result will be a dynamic and user friendly mechanism through which to consult essential data concerning the historic thermal and mineral water towns of within the European Council boundaries.

The prototype study has been developed initially for the cities of Bath in United Kingdom, Caldas da Rainha in Portugal and Mondariz Balneario in Spain, representing three very different cases of thermal towns by scale, history and typology, in a pilot project to test and prove the data model.

## **NEUROREHABILITATION OF CHILDREN: A MULTIDISCIPLINARY INTEGRATED APPROACH IS ESSENTIAL**

**DARIBAYEV ZH.**

National Children's Rehabilitation Center, Astana, Kazakhstan

Today the neurorehabilitation is an integral part of patient's recovery process after acute lesions of nervous system. A life-course perspective of the children with the pathologies of nervous system (cerebral palsy, brain and spinal cord injuries, stroke, neuromuscular diseases etc.) needs to be adopted as more patients live into their adolescence and adulthood.

We advocate for a multidisciplinary, integrative approach to neurorehabilitation, to be initially provided in rehabilitation centers for children, as an effective way to manage this disorders. The multidisciplinary approach includes medical rehabilitation, pedagogical correction and social adaptation. Medical rehabilitation includes kinesiotherapy, hydrokinesotherapy, robot-assisted walking, botulinotherapy, physiotherapy and electrotherapy, neuropsychological diagnosis and rehabilitation, biofeedback therapy, occupational therapy, Perfetti method – cognitive sensory-motor therapy, medications. Methods used in pedagogical correction include assessment by psychologists, speech therapy, interventions for intellectual disability and learning difficulties, individualized education plans, special and inclusive education, Montessori therapy, play therapy and music therapy. Social adaptation includes adaptive physical education and sports, training in autodrome and hippotherapy, orthotics and professional orientation.

Outcomes are assessed using accepted standards and scales (ICF - International Classification of Functioning, Disability and Health, FIM - Functional Independence Measure, GMFM - Gross Motor Function

Measure, MACS - Manual Ability Classification System, Barthel index of activity and daily living, and Ashworth scale), and an improvement is observed from a physical, psychological, and social viewpoint in most children. Follow-up is important: children's conditions are assessed through regular telephone conversations between their parents and the doctors. Families are also assisted by physicians in their home regions and during follow-up visits at the rehabilitation center.

We think that a multidisciplinary, integrative approach to neurorehabilitation, started in well-equipped and staffed centers, can improve appropriate diagnosis and treatment of children with pathologies of nervous system and ensure improved long-term results. Efforts should be made to fund (perhaps through public-private partnerships), open, and sustain such centers.

## **GDPR (GENERAL DATA PROTECTION REGULATION): DATA PROTECTION BY DESIGN AND BY DEFAULT**

### **DE LUCA M.**

Chief Executive Officer e-matika, Ischia, Italy

Taking into account the state of the art, the cost of implementation and the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for rights and freedoms of natural persons posed by the processing, the controller shall, both at the time of the determination of the means for processing and at the time of the processing itself, implement appropriate technical and organizational measures, such as pseudonymization, which are designed to implement data-protection principles, such as data minimization, in an effective manner and to integrate the necessary safeguards into the processing in order to meet the requirements of this Regulation and protect the rights of data subjects.

## **THE SPECIFIC CONTRIBUTION OF CLUSTERS IN FRANCE TO THE DEVELOPMENT OF THERMAL ACTIVITY**

### **DUBOIS T.**

CNETH (Conseil National des Etablissements), Paris, France

With a well-structured organisation of the thermal spa industry at the national level, clusters in France have recently emerged as new tools for regional development. Built under the same legal status in a non-profit scheme associating companies, institutions and research and training organisations, they gather transversal skills to serve quality, innovation and competitiveness. In that sense, they differ from regional federations who fulfill a more representative role. Members of thermal clusters share the same wish to take part in collaborative projects combining medium to small sized enterprises with public research institutions to encourage innovation within local thermal spa resorts. They address both the traditional spa treatment and diversified activities mainly in the field of prevention. Up to this day, two clusters have produced significant contributions and the creation of a third one is well under way. Created in 2009, the cluster thermal AquitainAQUI O Thermes, is mainly composed of SME's, originally from the Landes (South West of France) but nowadays including 25 medical spas from the Nouvelle Aquitaine region. They bring together competitive or complementary know-how in the field of medical spa alongside Dax, the 1<sup>st</sup> spa town in France, the University of Bordeaux 2), research institution (Institute of thermalism), and local authorities (Communauté d'Agglomération du Grand Dax). Some of its achievements include the conception of a new bathtub dedicated to carbogaseous waters, the redesigning of mudtherapy cabins, the conception of a connected device enhancing the practice of physical activity for patients. The second cluster to have been set up is

INNOVATHERM. It was labelled in 2013 by the Conseil Régional d'Auvergne and gathers 28 spa resorts, private companies with vested interests, private and public labs. Its specific aim is to promote scientifically assessed collaborative projects to invent new products or new concepts based on thermal spa concepts. The most significant contributions include the conception and evaluation of new disease management programs in the field of osteoarthritis and post breast cancer rehabilitation or the recuperation of geothermic energy derived from warm mineral water. One more cluster is set to be created in the biggest thermal region of Occitanie. Undoubtedly, clusters are a valuable tool for promoting innovative ideas and make them come to life. In the light of the French experience, it appears that a key success factor is the proper definition of their role and their connections to other organisations to avoid the overlapping of competences, work and budget and to favour complementary approaches. In this regard, a governance body or at least a coordination charter between stakeholders seems to be most profitable.

## **THE PHYSICAL COMPONENT OF THERMAL WATER AND ITS INTERACTION WITH SKINRECEPTORS. CROSS-OBSERVATIONALSTUDY AT TERME DI ISCHIA**

**FIMIANI A.**

Medical Specialist in Physiotherapy and Medical Idrology

In literature the clinical effectiveness of thermal treatments is well documented, but even today, the weakest part of all scientific medical articles is the explanation of the mechanisms of action. In a Era like the present one, where rules the Medicine of the proof of efficacy, it is not plausible to accept the therapeutic role of a product of which we do not fully know the mechanisms of action; the legislator has recognized to the thermal-mineral water “a therapeutic efficacy”, for which indirectly the thermal-mineral water has been assimilated to a drug; a drug works through a physical, chemical, or physical-chemical reaction. Since 1933 and until today, only the thermal stress and the salt component have been considered as a mechanism of action. What lacks is the physical component of the water. In the last decades, many researchers in other fields of Physics and Medicine have documented us about the physicality of the Human Being that acquires and transfers information with the external environment in a physical way using low frequencies. Therefore, thermal water acts through vibrations on a cybernetic system sensitive to wavelengths, and the same ions in solution have different wave lengths.



## ARTE-THERAPY IN THE THERMAL CENTERS: NEW WAY FOR COMPLEMENTARY METHODS OF TREATMENT

**GIGINEISHVILI G.**

National Institute of Physical Rehabilitation, Ministry of Health, Russian Federation

Искусство и медицина

По уставу ВОЗ, **«здоровье - это не отсутствие болезни как таковой или физических недостатков, а состояние полного физического, душевного и социального благополучия».**

В медицине арт-терапия, занимает особое положение, так как является тем самым звеном, которое, воздействуя на душу и интеллект человека, а также на его тело, замыкает цепь в интегративной системе охраны здоровья, существенно повышая ее значимость и эффективность.

Хотелось бы определиться с терминологией. Известно, что термин «арт-терапия» ввел в употребление Адриан Хилл (1938) врач и художник, использовавший живопись в работе с туберкулезными больными в санаториях.

Сегодня это словосочетание часто используется по отношению ко всем видам занятий искусством с лечебной целью: музыке, танцу, скульптуре, живописи и т.д.

Термин на английском - это множественное значение слова "Искусство" , т.е. "**Искусства**", поэтому используемый термин Артс-терапия более точно означает терапию искусствами как направление в широком смысле.

Тогда арт-терапия, а на русском языке есть еще эквивалент - изо-терапия, означает терапию именно живописью.

Выделяют четыре основных направления в применении арт-терапии:

- 1) использование для лечения уже существующего произведения искусства путем их анализа и интерпретации пациентом (пассивная арт-терапия);
- 2) побуждение пациентов к самостоятельному творчеству, при этом творческий акт рассматривается как основной лечебный фактор (активная арт-терапия);
- 3) одновременное использование первого и второго принципов;
- 4) акцентирование роли самого психотерапевта, его взаимоотношения с пациентом в процессе обучения его творчеству.

Рассмотрим зарубежный опыт, где при многих больницах открываются арт-студии, мастерские, музеи творчества пациентов. Порой подобная практика приводит даже к созданию настоящих творческих объединений, художественных коммун. Примером может послужить Центр Изобразительных Искусств и Психотерапии или как его еще называют «Дом художников» при психиатрической больнице Гуггинг (Gugging) в Австрии . В этом центре художники-пациенты живут в отдельных комнатах, для них созданы личные мастерские, также там находится художественная галерея и зал для конференций.

Лечение творчеством также применяют в реабилитационных центрах для людей страдающих различными видами зависимости (наркомания, алкоголизм, игромания и др.).

Более того арт-терапия может быть использована не только как клиническая дисциплина. В больших городах открываются художественные студии для обычных людей, которые хотят раскрыть свои творческие возможности, стремятся к личностному росту или просто хотят избавиться от негативных эмоций или напряжения после долгой работы.

Помимо этого, арт-терапия пользуется большой популярностью при работе с детьми и подростками в школах, центрах творчества, детских домах, особенно часто ее используют при работе с трудными подростками, или с детьми из неблагополучных семей, которые подвергались насилию со стороны взрослых или сверстников.

За рубежом все чаще арт-терапевта можно встретить в обычном стационаре при работе с соматическими больными, например в неврологии, геронтологических отделениях или при онкологических центрах.

Недавно открытый в Москве Научный центр арт-терапии при ФГУ РНЦ МРиК, показал насколько актуальна арт-терапия в реабилитационной практике и курортологии. У нас переполнены группы желающих заниматься арт-терапией, в первую очередь - это женщины, перенесшие оперативное вмешательство по поводу рака молочной железы и проходящие по этому поводу курс реабилитации. Показано, что арт-терапия существенно улучшает их психическое состояние, повышает качество жизни и на порядок сокращает вероятность рецидивов.

Артс-терапия в целом прекрасно вписывается в задачи курортологии. Различные методы лечения искусством замечательно сочетаются с бальнеологическим лечением, физиотерапией, массажем, рефлексотерапией, лечебной физкультурой и др. Они могут сопровождать все вышеперечисленные виды лечения, потенцировать терапевтическую эффективность целебных природных факторов, делая при этом сами процедуры более приятными.

Положительный эффект, например, на человека оказывает приятная функциональная музыка, мягко звучащая в приемных, холлах, столовых, комнатах отдыха и других общественных местах. Усиливает положительный эффект терапевтически оформленный интерьер. Все в целом снимает

напряжение ожидания, помогает преодолевать монотонность, улучшает настроение. Такое неспецифическое воздействие сказывается в целом весьма благоприятным для пребывания пациентов, их психического состояния и общего самочувствия, формирует у устойчивое позитивное отношение к данному учреждению и к процессу лечения.

Для повышения качества оказываемой лечебно-профилактической помощи совместно с Научно-исследовательским центром музыкальной терапии и восстановительных технологий мы разработали кабинеты музыкально-арт-терапии, где современное оборудование и технологии музыкальной терапии применяются в сочетании со специально разработанными арт-терапевтическими интерьерами, которые могут поставляться санаториям и другим медицинским учреждениям в комплекте.

В рамках санаторно-курортного лечения могут применяться не только рецептивные, но и активные методы Артс-терапии, например, изо-терапия, вокалотерапия, танс-терапия и пр. Активное участие самих пациентов в лечебном процессе, не только позитивно сказывается на их здоровье, но выполняет попутно задачу по культурному и досуговому обслуживанию курортников.

**В свете стоящих перед курортологией и медицинской реабилитацией задач Артс-терапия становится неотъемлемой и важной частью общего комплекса мероприятий по обеспечению лечения, оздоровления и культурно-бытового обслуживания пациентов.**

Учитывая огромное медико-психологическое, социально-культурное и экономическое значение Артс-терапии, для ее развития в масштабах страны необходимо осуществить ряд шагов на государственном уровне:

1) выйти с инициативой на соответствующие ведомства, руководствуясь многолетним зарубежным опытом и

отечественными разработками, признать Артс-терапию отдельной самостоятельной профессией, с различными специализациями внутри данной специальности;

2) расширить существующий пока еще малочисленный отечественный опыт и ввести в систему Высшего образования учебные программы всех уровней по различным направлениям Артс-терапии: музыкотерапии, изо-терапии и пр.

3) официально ввести кабинеты Артс-терапии в систему здравоохранения, в первую очередь в санаторно-курортную систему.

**Во внедрение инновационных технологий, открытии технически оснащенных кабинетов Артс-терапии в санаториях и реабилитационных центрах, клиниках, детских учреждениях и социальных центрах, обслуживаемых профессионально подготовленными специалистами, заключается огромный резерв развития здравоохранения, общей культуры и социальной сферы.**

## **MEDICAL REHABILITATION AND SANATORIUM TREATMENT OF JUVENILE IDIOPATHIC ARTHRITIS (JIA) IN THE CONDITIONS OF A CHILDREN'S LOCAL SANATORIUM.**

**GUBINA N.B., MOROZOVA O.L., TERENCEVA G.V.**

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The development of programs for medical rehabilitation and sanatorium treatment of juvenile idiopathic arthritis (JIA), in connection with the lack of a corresponding section in federal clinical recommendations, is a high priority issue. Aim: on the basis of scientific review and practical experience, to develop and evaluate the effectiveness of rehabilitation and sanatorium-resort treatment programs for children with joint pathology in the conditions of a local children's sanatorium.

Material and methods: According to the data of our institution, the growth of children with juvenile arthritis has been registered from 6.1% 2010 to 11.8% in 2016. We analyzed 154 cases of the disease with juvenile arthritis for the last 1.5 years. 100% of children had a concomitant pathology with a multiplicity of 3.6. Evaluation of the activity of the disease and pain was carried out according to the Visual Analog scale (VAS). Aims of rehabilitation in sanatorium conditions: reduction of pain syndrome; decrease in the degree of activity of the process, prevention of deformities and functional insufficiency of the joints; muscle hypotrophy prevention; keeping of quality of life; Sanation of chronic infections; Treatment of concomitant diseases. Together with continued adequate basic anti-inflammatory therapy, climatotherapy, exercise therapy, massage programs were developed with the use of local natural physical factors (Sestroretskaya ultra-acid gitiyevaya mud, local mineral water from the Gdov horizon). It was high activity outpatient and inpatient

treatment and according to a certain scheme preformed physical factors were used; In the subacute period galvanic mud, mineral baths of coniferous-salicylic, general sulfur or local (vortex hand or foot), cryotherapy were added. In case of ankylosis, contractures: heat treatment (ozocerite) on the joints; Mud therapy on the joints; Mineral baths with bischofite were added. These clinical recommendations can be considered to the level of evidence "C". In evaluating the effectiveness of the joint syndrome, the Visual Analog scale (VAS) was used. For electronic evaluation is scores the dynamics of general health condition we used "nonspecific changes in the health status" developed in our institution. The efficiency of sanatorium treatment and rehabilitation of children with joint diseases was 73%. A computer program is used to assess the effectiveness in catamnesis.

Results: We have developed and implemented in practice the work of the rehabilitation program and sanatorium-and-spa treatment of children with joint diseases with an assessment of effectiveness in scores. The results of the effectiveness evaluation in catamnesis will be presented as data is accumulated.

## **WATER IS THE MOST STUDIED BUT STILL ABLE TO SURPRISE US**

### **GURNARI G.**

Benaquam srl (RSM). FEMTEC Vice President

### **ELIA V.**

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Water, in all its forms and compositions, never ceases to amaze. In any state, it is considered a relatively simple molecule (a "special" union between two of the most widely existing atoms on our planet) and in its study we often stop stiff stoichiometric equations or the physical effects we know.

Even in the approach to thermalism, we tend to simplify action-response mechanisms to the human body. But the philosophical doctors of antiquity already realized that things are not always as they appear.

A demonstration of what is still needed to deepen the study of water is the example shown that can only represent how discovery is at the origin of considerations that look beyond the dictates of current generalized knowledge on water, not just as specific principle, but in relation to countless more or less complex molecules on Earth that have to do with natural water.

The iterative method, a procedure capable of highlighting variations of pure chemical-physical parameters, otherwise unexplainable.

Historically, the first application of this procedure, unknowingly adopted, involves the production of highly diluted aqueous solutions. Iteration involves two stages of preparation: dilution and agitation.

Over the last few years, our group has used the iterative process of pure water filtration with sintered glass or cellulose filters. Measure some simple chemical-physical parameters such as electrical



conductivity. The results are amazing especially for the numerical variations of the measured parameters and the repetitive results. Iteration consists in filtering water under vacuum, recovering the filtrate, and repeating filtration.

A further variation involved the use of both natural and synthetic hydrophilic polymers. Of course, these are insoluble polymers such as Nafion or cellulose. This variant was also extremely effective. Iteration involves contacting the polymeric membrane with pure water. Remove the membrane from the liquid and allow it to dry in the air. Rehydrate the polymer by immersing it in the liquid used. Each repeated operation (several hundred times) produces measurable variations of the parameters. If the number of iterations is not high enough (a few dozen times), experiencing it feels induced to ignore the effectiveness

## **INNOVATION IN THE TECHNOLOGICAL APPROACH: THE CHALLENGES OF SELF-MONITORING AND TELECONTROL**

**GURNARI G.**

Benaquam srl (RSM). FEMTEC Vice President

Thermalism, as we consider it today, boasts 25 centuries of history. In recent decades, it has undergone extensive re-evaluation to offer services and treatments of quality to keep up with the times and comply with the many standards issued for the communities with presence of water.

The complexity of the ordinary management had therefore to adapt to new requirements of standards, to new protocols in the field of medical treatment and to new security conditions - not only regarding health and hygiene - of installations and related technologies. This has involved and involves a very different approach to issues that in the past were different and certainly less technical and complex. This new wide management field therefore includes the involvement of engineering, architecture and various applied sciences (physics, chemistry, microbiology, mechanics and electrical engineering) which represent the pillars of the technological content of each thermalism center, where it is compulsory to guarantee the safety of customers, the effectiveness of treatments and the compliance with specialist standards (including those relating to operator safety). All this with the utmost attention to the quality of the water used for the treatments.

The new structural framework requires new figures in addition to traditional ones (the Manager and Administrator, the Health Director, the Medical Staff, the specialized – and not - operators).

But even when there is one (or more) technical manager which is responsible for the management and maintenance of technological components, the vastness and complexity of the various functions and devices is such that it is not always possible to control them sufficiently in order to guarantee their functionality and the right scale economy. Today, one of the most important centers of cost for every modern thermalism center is the technology and the technique for its proper use. Deficiencies and criticalities in the structural system inevitably affect the efficiency of the system and the quality of the services provided.

These new needs have prompted the world of technology to provide new tools with the aim of simplifying and improving procedures and compliance with protocols as well as improving the efficiency of devices and functions, resulting in significant energy and water saving with undeniable positive feedback not only on management economy, but also on the performance perceived by the Customer / Patient.

The advent of digital technologies even in the thermalism sector allows today to control every device of any type - remotely and with great reliability - continuously.

Every environment and operation parameter of any existing device - from the simple hydraulic valve to the most complex multi-parameter measuring instrument required for water and air quality - can be controlled at any time and followed in real time, with the capability to store millions of data of any type and to intervene remotely in order to modify functional modes (and not just turned on and off!).

This is the Telecontrol, a system capable of controlling each technological device, each machine and equipment and allowing to vary their functioning in relation to the different needs (user load, internal and external environment parameters, consumption and technical anomalies).

The systematic collection of information and data becomes the subject of schematic representations of the operating condition of the entire structure: in the monitor of a single control station all system functions can be displayed, with clear and interactive screens, where it is possible to analyze - in quick succession - all present devices, their status, and to gather all data of remarkable strategic interest. In addition, if the operating devices are equipped with processors that regulate multiple functions in time (PLC), it's possible to get information about electrical, hydraulic and thermal loads (for example) and change the condition in real-time. The Telecontrol is not very widespread in the thermalism centers: this is a cultural shortage that needs to be filled. In fact, the latest telecontrol systems combine great reliability with an acceptable cost that allow to save money and work effort in just a short time, far beyond the small investment needed to install them.

But besides the Telecontrol - a tool that is now considered essential for modern management of a thermalism center - the Self-monitoring must be adopted.

This last analysis and programming tool allows to plan all the activities relevant to the proper functioning of the thermalism center, optimizing the various required activities and rationalizing consumptions, materials and chemicals warehouses. The system analysis and the planning of all maintenance, detergent and

sanitizing activities are part of a protocols program to be adopted to ensure the full availability and security of all the services offered.

In the Self-monitoring all structural requirements are considered: from the daily cleaning plan to the periodic sanitation of electro-mechanical and hydraulic apparatus and devices. The staff can easily follow the activities in chronological order, using the tools and means according to the encodings of each reality. Since Self-monitoring is also carried out through the adoption of a manual, the Self-monitoring situation can be checked every time and also with the corresponding responsibilities. This prevents application errors and allows to plan scientifically purchases, maintenances and everything needed BEFORE the service breaks or the lack of suitable and necessary products occurs. But by rationalizing the interventions, realistic management savings are also evident in single details, with appreciation and simplification of relations with the possible control by the public authorities.

Telecontrol and Self-monitoring therefore represent real management standards, the proper use of which would also allow thermalism to keep up with the times. But the main expected result is the improvement of the perceived and measurable quality and the overall economic savings obtained through a greater structural efficiency.

## **PLANNING, BUSINESS PLAN AND MANAGEMENT CONTROL IN THE THERMALISM OF QUALITY**

### **GURNARI G.**

Benaquam srl (RSM). FEMTEC Vice President

### **MANZOTTI A.**

Industrial expert, economist, Contract Professor c/o Luiss B.S. of Rome, consultant for several public and private companies

Managing a structure of thermalism involves many aspects, all very professional.

In fact, management covers many fields of application, medicine, patient / customer relationship, related services, relationship with institutions, technology, maintenance, and the professionalism of employees. Many cost centers, few revenue centers, inevitably have to go back to the counts as for any kind of industry or manufacturing center.

Limited, but strategic notes for a clearer view in the economy-finance of a complex structure still suspended between health care and hotel, between wellness center and center of integrated services to the person where improvisation very often undermines the quality of the offer and above all the result in terms of business. And we all have to learn.

The orientation of the corporate management to the future is a consequence of the difficulties of the undertaking to manage the environmental turbulence; hence the need for management to predict the future trends with a certain advance with respect to the administrative detections of the company according to a logic of feedforward.

It is the task of guiding and orientation of management, capable of ensuring that the use of resources effectively and efficiently, in relation to the economic and social goals prefixed.

Check means influence and direct behavior through the setting of objectives and performance standards of an organization.

Programming and Management Control - why?

- My organization produces good results (in comparison to competitors)?
- How do you bring the entire organization to work together for the objectives that I have in mind?
- How can I make it clear to my employees where I want to go? How do I transfer their objectives of the organization?
- There is a right way of others to assess people?
- How do you make people more aware of the results?

Summarizing the management control is the activity of driving performed by managers to ensure the acquisition and use of resources effectively and efficiently in order to achieve the objectives established economic.

## **HISTORY AND BALNEOLOGY OF ONSEN IN JAPAN**

### **INOKUMA S.**

Chiba Central Medical Center, Chiba, Japan

Japanese Islands has over 3,000 Onsen districts and near 30,000 Onsen facilities, and the same number of its population visit there every year.

From the ancient prehistoric period, ablution has been a popular custom ritually. Oral literature said troops injured were cured in Onsen in 4<sup>th</sup>C. The oldest historiography wrote royal visit to Onsen in 7<sup>th</sup>C. Bathing for the sick was written and public bath in temples appeared in 6<sup>th</sup> C. Toji (Onsen-therapy), in that workers visited Onsen and relaxed in off-season became a prevalent custom in 16<sup>th</sup> to 19<sup>th</sup>C. Old balneology developed in that period.

Modern balneology started after Meiji Restoration in 19<sup>th</sup> C, and Japanese Society of Balneology, Climatology, and Physical Medicine (BCPM) did in 1935. Health insurance system does yet not include Onsen-therapy, but local governments who have Onsen try to make a best use of Onsen resources in relation to health-consciousness.

For evidence-based balneology, BCPM encourages the scientific studies. One study of ours being presented concerns effect of CO<sub>2</sub> bathing on injured peripheral circulation. Some patients with connective tissue diseases show not only a low temperature in fingers but also temperature dispersion among fingers; and those were ameliorated by hand immersion in warm water. Amelioration of the dispersion was much better in CO<sub>2</sub> bathing than in tap water bathing.



# **THERMAL HYDROTHERAPY AS AN ENVIRONMENT AND FIELD OF PRACTICE FOR THE PHYSICAL THERAPIST IN BRAZIL**

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## **INTRODUCTION**

Thermalism is represented in the professional practice<sup>1</sup> of physiotherapists by the adequate use of hydrotherapy involving an interprofessional work for the functional health of the population<sup>2,3</sup>. In Brazil, physiotherapy seeks to associate the therapeutic benefits and the promotion of human health with the hydrothermal aquatic resource<sup>2</sup>.

## **OBJECTIVE**

The objective of this study was to present an analysis of the physical therapist practice in hydrothermal spaces in Brazil.

## **MATERIALS AND METHODS**

Four institutions in the Brazilian south and southeast working with thermalism from hot springs to spa hydrotherapy were investigated. Following approval by the ethics committee, four types of questionnaire were administered to four groups: physical therapists (n=5), users (n=34), managers (n=6), and other health professionals (n=11). The topics comprised the practice of physical therapists in the thermal environment, concepts of comprehensive health care, and complementary and integrative health practices. The data were analyzed qualitatively through content analysis and additionally with descriptive statistics.

## RESULTS

The main results pointed to the practice of the physical therapist in thermal hydrotherapy as being oriented primarily to rehabilitation, although prevention and health promotion interventions were also identified.

## CONCLUSIONS

It is up to the physiotherapist in his professional practice in the thermalism and in other modalities of hydrotherapy to develop specific procedures and techniques based on the social dimensions of the profession, besides the new functions and activities in the perspectives of the paradigm of the functionality, considering the scientific evidences, to take quality of life and health for the population<sup>2</sup>.

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## **THE METHODOLOGICAL APPROACH TO THE SANITARY-MICROBIOLOGICAL QUALITY EVALUATION AND SAFETY OF MEDICINAL MUD APPLICATION**

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It is known that microbial cenosis of natural hydromineral resources consists of two groups of microorganisms: autochthonous and allochthonous. Autochthonous microorganisms are always present in peloids and in the environment of their formation while allochthonous ones, introduced from the outside, are indicators of the ecosystem pollution and belong to criteria for evaluation of epidemic safety. But there are pathogenic species of the microorganisms that cause infectious diseases. It causes tough control of sanitary condition of peloids and reservoirs of curative (medicinal) appointment.

For determination of the range of deviations from hygienic standards, sanitary and bacteriological researches of peloids and covering water (brine) are conducted directly on the deposits at a stage of their exploration and during further exploitation. According to the results of the sanitary-microbiological researches it is necessary to draw conclusions about the ecological situation in the deposit and ensure epidemic safety of application of natural resources in balneology.

According to operating in Russia norms (standards), the basic sanitary-microbiological indicators (indices) characterizing the degree of faecal contamination of peloids, are: lactose E. coli, sulphite reducing Clostridia and total microbic number (TMN). Detection of potentially pathogenic and pathogenic microorganisms (*Pseudomonas aeruginosa*-*P.aeruginosa*, staphylococci-*S.aureus*) is

an indicator of epidemic safety of therapeutic mud, but the detection of faecal coli forms bacteria and enterococci confirms the presence of fresh faecal contamination (pollution).

***The Sanitary and Microbiological Requirements for Brine and Medicinal Mud of Deposites of the Russian Federation***

Name of indicators	Unit of measurement	Requirements of normative documents (of standard documentation)	
		Brine	Curative mud
TMC (total microbial count)	CFU/ sm <sup>3</sup> (g)	no more than 1000	no more than 500 000
Titer of total coli form bacteria (coli-titer) lactose E. coli	CFU/ sm <sup>3</sup> (g)	not less than 111	not less than 10
Pathogenic staphylococcus (S.aureus)	CFU /dm <sup>3</sup>	no more than 20	absence in 10 g orс
Pseudomonas aeruginosa (P.aeruginosa)	sm <sup>3</sup> (CFU)	not less than 111	absence in 10 g
perfringens-titer (C.perfringens)	sm <sup>3</sup> (g/ CFU)	not less than 1	not less than 0,1

At the appearance of potential threat of entering oil products to those deposits it is recommended to evaluate the quality of peloid according to the following plan:

- Determination (Definition) of sanitary-bacteriological indices (parameters) according to the standard for all types of peloids scheme, including: total microbic number; titer of total coli

form bacteria (coli-titer); titer of sulfite reducing Clostridia (perfringens-titer); pathogenic coccal micro flora (staphylococci, streptococci), *Pseudomonas aeruginosa*.

- Monitoring of dynamics of development of autochthonous microflora involved in peloid genesis, including nitrifying, denitrifying, cellulose destroying (aerobic and anaerobic bacteria), putrid (aerobes and anaerobes that produce hydrogen sulfide, ammonia, indole), sulfate reducing, butyric-acid, Tion-acid and uro- bacteria (urinary bacteria).
- It is recommended the compulsory study of hydrocarbon-destroying (destructive) ecology-trophic groups of microorganisms as a biological indicator of oil pollution.

Additionally, you need to understand that bacteria, actinomycetes and mould fungi inhabiting the thick of mud sediments and covering water are characterized by a large variety of processes of metabolism. Decomposing vegetable (plant) and animal remains they carry out the mineralization of organic matter and products of their metabolism represent biologically active agents, such as antibiotics, enzymes, vitamins, stable forms of complex organic molecules of the humic acids having pharmacological properties. The study of the organic compounds is also important for understanding the processes of formation and preservation conditions of balneological mud.

### **Conclusion.**

Application of the above-stated methodology of evaluation of pollution (contamination) and evaluation of the quality of medicinal mud according to the sanitary-microbiological indices (indicators), will allow to prevent the violation of peloidogenesis, to ensure epidemic safety of mud cure and to preserve the resource potential of the resorts.

Criteria for assessing the quality of peloid and brine of physico-chemical and toxicological parameters are a topic for another report. I hope that the proposed methodological approach to assessing the quality of natural medicinal resources shall be used in the work of the Technical Commission FEMTEC, when designing the parameters of certification of peloids.

## **HEALTH THERMAL CLUSTERS: THE PERSPECTIVES OF MUD THERAPY IN GREECE**

### **KOUSKOUKIS K.**

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Thermalism does not regard just the elderly, but should be established as a new lifestyle, trend and behavior of young people in terms of prevention. It consists of a wide range of preventive and therapeutic applications using natural resources in areas with particular environmental and cultural characteristics and specialized facilities for physical, mental and spiritual health. Mud therapy is a specified therapeutic form of Thermalism and can be applied on diseases of myoskeletal and nervous system, as well as on dermatological and gynaecological disorders. Mud therapy is applied in psoriasis which is a chronic, scaling inflammatory skin disease that affects approximately 1.5-3% of the population. The patients feel stigmatized, which further intensifies their lack of self-confidence and self-esteem. We conducted a research about 'Mud therapy, sun exposure and balneotherapy as an effective supplementary combination treatment in psoriasis: a pilot study'. In this study, we compared the treatment results in psoriatic patients, who underwent simultaneously mud therapy, phototherapy and balneotherapy and we also evaluated potent treatment complications. We concluded to a standardized, intensive and low cost protocol with encouraging results and absence of side effects, supporting the idea that the perspectives of mud therapy in Greece are endless. Finally, these fruitful results are encouraging us to investigate more in an evidenced based form and of course we purpose the collaboration with all the official members of FEMTEC,

in order to contribute together in the complimentary therapy of psoriasis since WHO declares that 100 million psoriatic patients all over the world desperately keep asking for relief and treatment.



## **MEDICAL REHABILITATION ORGANIZATION IN PEDIATRIC CANCER PATIENTS.**

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There are more than 3 thousand new cases of pediatric cancer each year in Russia. More than 50% of these children can currently be cured.

However, in most cases there are long-term treatment sequelae. These children require medical rehabilitation.

In 2016 a total of 341 pediatric cancer patients were admitted for medical rehabilitation in pediatric sanatorium "Solnechnoe".

All patients were divided into three groups.

The first one consisted of 92 (27%) children with acute lymphoblastic leukemia on maintenance therapy (low-dose methotrexate and 6-MP), many of them with chemotherapy related encephalopathy and peripheral neuropathy. In this patients' cohort besides the usual pharmacotherapy the Terreinkur, limb massage and individual or group physical therapy were used. In some cases additional colloidal silver inhalations were applied.

The second group consisted of 133 (39%) children at least 24 months post cancer treatment. In these children additional medical rehabilitation procedures were possible such as aquatic physical therapy, bubble baths, halochamber and photo-chromotherapy.

The third group included 116 (34%) pediatric cancer survivors in remission for at least 2 years. Besides the methods already mentioned they received some physiatrics rehabilitative treatment (electrically induced sleep, electrotherapy, magnetic and light therapy, and localized darsonvalization), medical baths, and mud therapy.

This differentiated approach to pediatric cancer patients' medical rehabilitation allows using all the potential of a multidisciplinary sanatorium to treat the sequelae of cancer treatment restoring the child's health and reducing the relapse probability.

## **SCIENCE AND MEDICAL RESEARCHES IN THE SPANISH THERMAL SYSTEM**

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Balneotherapy research in Spain takes place mainly at the Complutense University of Madrid, in the Professional School of Medical Hydrology and Department of “Physical Medicine and Rehabilitation. Medical Hydrology” (Medicine Faculty) and other Universities such as those of Extremadura, Granada, Seville, Vigo and Zaragoza.

Hydrotherapy and Aquatic Therapy in Universities: Católica San Antonio de Murcia, Extremadura, Granada and Málaga and natural mineral waters in the Complutense University of Madrid.

We will present researches published during last year on the thematic area belonging to several scientific groups in Spain. In addition, we have celebrated the XIX Congress of the Spanish Medical Hydrology Society the 15th-18th of December 2016 in Archena (Murcia) with 26 keynotes, 22 oral communications and 9 posters published on the Annals of the society and V Iberoamerican Peloid Congress (CIBAP 2017) in June in “El Raposo”, Extremadura, with 17 keynotes, 15 oral presentations and 17 posters about peloids in a multidisciplinary use.

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# **RETROSPECTIVE STUDY ABOUT REHABILITATION AFTER LUMBAR DISK SURGERY AT PATIENTS HOSPITALIZED IN YEAR 2016 IN BALNEAL AND REHABILITATION SANATORIUM OF TECHIRGHIOL**

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## **INTRODUCTION**

In year 2016, in Balneal and Rehabilitation Sanatorium of Techirghiol were hospitalized 836 patients with lumbar disk surgery.

## **BACKGROUND**

Complex rehabilitation programs (medical and balneal treatment, physical therapy, massage and kinesiotherapy) are available for individuals after lumbar disk surgery.in Balneal and Rehabilitation Sanatorium Techirghiol

## **OBJECIVES**

A large screening of this patients regarding their age, number of lumbar disk surgery, level of disk surgical intervention, possible cause of disk hernia, symptoms at admission, clinic evaluation and type of medical and balneal treatment applied in Sanatorium.

## **METHOD**

Statistics analyses of all parameters and correlate data.

## **RESULTS AND CONCLUSION**

The complex treatment applied in Sanatorium reduces pain after lumbar disk surgery with positive impact on quality of life and disability and also decrease the appearance of a new disk hernia. The treatment should be individualized according to the patients

and its symptoms. The patient can return faster to work and other daily activities.

## **THE IMPORTANCE OF HYDROKINESISTHERAPY IN REHABILITATION OF MUSCULOSKELETAL DISABILITY**

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Hydrokinesitherapy or balnotherapy is a useful method in rehabilitation medicine. The use of water as a natural physical agent or as a mean of body immersion to help kinesiotherapy techniques by temperature, buoyancy, viscosity, and hydrostatic pressure or hydrodynamic resistance is widely known. In thermal water, in addition to the classic physical diving effects, we can look at the "pharmacological or chemical" effects properly the thermal water. All these effects can be used in the rehabilitation programme of patient with musculoskeletal disability. In order to exert systemic effects, exercise programs should include aerobic exercise, resistance exercise (and balance exercises) and power training. It is indicated for people with musculoskeletal disability, especially after immobilization or injury or after joint reconstruction (Knee or hip replacement), postural disorders, back pain, contractures, muscle atrophy and others. Between the conditions that can be treatable by balnootherapy a mention it is to need for the rheumatic diseases how arthritis and osteoarthritis osteoporosis, fibromyalgia and spondylarthritis. People who are unable to engage in normal physical activity or who complain of severe pain during exercise may also benefit from aquatic therapy.

Musculoskeletal rehabilitation program in thermal water is usually designed to meet the needs of the individual patient, depending on the specific problem or disease. In order to define a therapeutic exercise it is necessary to define time and tipe of training, frequency, intensity and duration of exercisce program.

Hydrokinesitherapy is carried out under strict supervision of the physical therapist, who controls the correct execution of the exercises and, if necessary, corrects them. The available evidences suggest that balneotherapy is a useful method in rehabilitation medicine. The number of published articles gradually grows but still there is a lot of methodological deficiency.



## **STUDY OF MINERAL RESOURCES OF ADJARA (PELOIDS, CLAYS, WATERS) WITH THE PURPOSE OF THEIR APPLICATION IN MEDICAL (BALNEOLOGICAL) AND PHARMACEUTICAL PRACTICE**

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In the 21st century, the rapid growth of medicinal products nomenclature is associated with the large consumption of raw materials. Therefore, searching for new raw materials is becoming an actual issue.

Despite the diversity and abundance of mineral resources, only their insignificant part has been assimilated so far, and their subsequent research and study is one of the most topical problems for modern medicine and pharmacy.

Medicinal muds, mineral waters and clays due to their great therapeutic effect hold a special place in balneology, resort therapy and pharmacy. The history of their application starts from the ancient times.

In the available literature there is found no data on the research of the mineral resources spread in Adjara with the purpose of their application in medical and pharmaceutical practice.

The aim of the research was to study the mineral resources of Adjara with the purpose of their application in medical and pharmaceutical practices.

The chemical compositions (micro- and macro-elements) of 58 peloids, 8 clays and 38 mineral waters of Adjara region have been studied by using physical-chemical and modern instrumental methods of analysis.

As a result of the chemical research, the contents of balneological components have been confirmed in the study objects.

Physical-chemical and technological characteristics of clays and peloids have been studied. The possibility and advisability of their using as auxiliary substances - base carriers in soft drug formulations has been established.

On the basis of the pharmacological studies it has been determined the specific antibacterial action and safety of three peloids and one clay. It has been also established that the mineral water Shubani significantly stimulates the acid- and enzyme-producing function, while not affecting the peripheral blood composition. It stimulates the synthesis and release of bile acids, bilirubin secretion, cholesterol excretion with the bile, and increases a cholate-cholesterol coefficient.

## **GDPR (GENERAL DATA PROTECTION REGULATION): THE MANDATORY DPO (DATA PROTECTION OFFICER)**

### **MAZZUCHELLI C.**

Poiesis sagl, Maroggia, Switzerland

What is a Data Protection Officer (DPO)? The New Role Required for GDPR Compliance - A Definition of Data Protection Officer - Which Companies need Data Protection Officers? - Qualifications for Data Protection Officers - Best Practices for Hiring a DPO

## **HEALTH RESORTS IN CUBA. INTEGRATION BETWEEN THE MEDICAL APPROACH AND TOURISM**

### **MENÈNDEZ CAMPORREDONDO F.**

Vice Presidente FEMTEC, Head coordination American area, Tourism and health Commission

CEO Solymed Travel, Events, Health Tourism and Wellness, Cuba

The health and tourism sectors come together to become an international reference for Health and Welfare Tourism, taking advantage of the infrastructures and experiences of each of the sectors and groups involved in the activity.

The health sector brings the specialized value of the offer and the tourist brings the experience of the product and the commercialization. The results obtained have shown that the development of the destination can be driven by health tourism.

Health and Wellness Tourism is an activity that involves a large number of stakeholders, which is evident in its multidisciplinary activity. To achieve high competitiveness, it is necessary to integrate many sectors, efforts and skills, with organization, development and implementation in line with the high level available to the countries most developed in this activity. In this way, the tourist destination integrates health services into its global tourism offer by focusing on the patient through a sequence of value creation and integration based on joint efforts.

In order to reach the appropriate excellence, it combines the integral development at national level as a tourist destination, with a practical-operational methodology focused on the work of the whole apparatus involved with the health system, which allows to offer more benefits and contribute more competitiveness.

The increase in health tourism has beneficial effects on tourism activities, technical and vocational training, innovation,

incorporation of new technologies, on the environment, generating jobs and helping to reduce the seasonality of tourism.

A series of actions essential to this development (improvement of infrastructures, hotels and hospitals in their own role), technology innovations, telemedicine and promotion through a portfolio of products that encourage foreign investment, bring new ideas, refresh the strategic vision and attract different tourist segments.

Identifying the conditions and areas of opportunity, “Health and Wellness Tourism Clusters” are created as a strategic alliance of the tourism and health sectors, of great importance in the economy, to position itself as a point of reference in the international market.

## **GDPR (GENERAL DATA PROTECTION REGULATION): COMPLIANCE AND CLOUD BACKUP**

### **MICCHINI G.**

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The EU is imposing hard penalties on organizations that have collected data on EU citizens, but failed to comply with the GDPR - Penalties for noncompliance - Is Your Backup GDPR Compliant? - Cloud based backup solution allows the retrieval of data without physical tape media in the mix.

## **THERMALISM AS AN INTEGRATIVE PRACTICE IN THE EDUCATION OF THE PHYSICAL THERAPIST IN BRAZIL**

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### **INTRODUCTION**

Brazil is world-renowned for its natural riches and diversity, and boasts countless water springs with unique biochemical characteristics and major therapeutic potential. Historically, crenotherapy was introduced in Brazil from customs of the Portuguese settlers<sup>1</sup>, which prompted the first studies addressing mineral waters that were conducted by the Universities of Minas Gerais and Rio de Janeiro<sup>2</sup>. In view of the therapeutic potential of that natural resource, the National Policy on Integrative and Complementary Practices (PNPIC), which has been in effect for 11 years, incorporated crenotherapy and thermal hydrotherapy into the range of practices of the Brazilian public health system<sup>1</sup>. However, the use of those resources by health professionals in health promotion, prevention, and rehabilitation is still limited.

### **OBJECTIVE**

To report on the experience of the incorporation of thermalism into the curriculum of the Physical Therapy program of a Brazilian public university.

### **MATERIALS AND METHODS**

In the preparation of the curriculum of the Physical Therapy program of the Universidade Federal do Paraná, the inclusion of a discipline denominated "Complementary Therapeutic Resources"

was proposed to address the complex health care models introduced by the PNPIC of the Brazilian Unified Healthcare System (SUS). That discipline is taught during the first semester of the program by two professors with experience in the subject of thermal hydrotherapy, with 50 students each year. Theoretical studies and hands-on experience are combined to aid the teaching-learning process.

## RESULTS

Over the course of the classes, theoretical frameworks are provided that allow students to learn the principles of hydrothermal therapeutic modalities as well as their indications, contraindications, and most relevant effects. Additionally, undergraduates work in groups for reflection and studies on modalities of thermal hydrotherapy, and in a field lesson they can experience some of those practices, such as thalassotherapy. As part of the program, students also improve their knowledge on hydrotherapy with the aquatic physical therapy disciplines.

## CONCLUSIONS

In this way, it is expected that prospective physical therapists can benefit from these professional spaces and seek further scientific evidence for the benefit of human health across life cycles and in all levels of complexity in health care.

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## **REHABILITATION OF CHILDREN IN THE CONDITIONS OF MOUNTAIN RESORT IN KAZAKHSTAN**

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### **RESEARCH OBJECTIVE**

Evaluation of efficiency of methods of rehabilitation in the conditions of mountain climate on the example of Children's clinical sanatorium "Alatau".

### **MATERIALS AND METHODS**

The research of the results of children who received a course of treatment in Children's sanatorium "Alatau" during 2016. The review of treatment methods and climatological evidences of the location of "Alatau" Sanatorium.

### **SUMMARY**

The article tells about climatological evidences of the mountain resort of "Alatau" sanatorium, about the advantages of use of natural factors in children's rehabilitation, about complex improvement of children's health with somatic diseases and also about the rehabilitation of children with oncohematological pathologies.

## **BALNEO-TOURISM DEVELOPMENT IN NIGERIA: AN OPTION FOR ECONOMIC GROWTH**

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### **GBEFWI G. J.**

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This paper proposes introduction of balneotourism to Nigeria as a means of economic diversification. Balneotourism is one of the most quickly developing industries of the World. Nigeria meets conditions required for starting balneotourism industry. She enjoys warm tourism attracting climate, local currency exchange rate makes the service – including tourism services – cheap, affordable to an average balneotourist from Europe. As result of investigations from the authors have proven, Nigeria has a number of thermal springs yielding water of good balneological quality. There is potential to create around each of these springs a health centre, aimed at attracting balneotourists from Europe and around the world. Jobs for medical personnel, administrative staff, and for non-technical workers will be created. Thus employment, which is the source of social unrest in some parts of Nigeria, will be reduced.

## **THE SAFETY CULTURE IN ORGANIZATIONS IS THE QUARANTEE OF SUCSESFUL QUALITY MANAGEMENT**

### **OSPANOVA SH.**

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Patient safety is the most important component of the quality of medical activities. Long experience shows that if the organization developed safety culture, it promotes the proper safety standards and a high level of reported medication errors and development of safe behavior.

Medical errors occur worldwide and lead to different consequences for the patients from dissatisfaction with the treatment of disability and even death. Annually from 44.000 to 98.000 people in the USA die or invalidities as a result of medical errors that could be avoided. Creation of a safety culture and its assessment are one of the risk management tools in healthcare organizations, reducing the likelihood of medical errors, improving patient safety.

The management of the medical organization has to stimulate team work and introduction of strategy of increase in a safety culture to ensure safety and quality. The safety culture is a set of individual and group values, perceptions, competences and the accepted behavior models which define commitment of the organization to ensuring the principles of safety of the patient.

## LA VEILLE TECHNOLOGIQUE AU SERVICE DU DEVELOPPEMENT TERRITORIAL

OUESLATI R.

Dept. Thermalism, Ministry of Health, Tunisia

"La veille technologique est *l'observation et l'analyse de l'environnement scientifique, technique et technologique* pour *en déduire les menaces et les opportunités de développement*" (Jakobiak, 1992).

La Tunisie dispose d'une importante réserve d'eaux thermales et possède une disposition très avantageuse d'un littoral qui lui permettent de diversifier ses produits curatifs et touristiques. L'histoire d'utilisation des bienfaits de l'eau en Tunisie remonte à l'antiquité, argumenté déjà par le nombre des vestiges archéologiques existants à travers le pays.

Grâce aux richesses naturelles dont dispose la Tunisie et les effets de levier de l'économie régionale, l'hydrothermalisme connaît un essor inégalé.

C'est dans ce cadre, l'Office National du Thermalisme et de l'Hydrothérapie a mis en œuvre les programmes de développement du secteur des eaux conditionnées et celui de l'hydrothérapie (thermalisme, thalassothérapie et spa) tout en proposant les mesures nécessaires afin de dynamiser les régions riches en ressources naturelles.

Suite à la généralisation d'un mode de vie basé sur la consommation des produits naturels ainsi que l'évolution démographique des pays développés, une hausse globale de la demande concernant le tourisme curatif et de santé sera attendue. De même avec l'amélioration du niveau de vie des tunisiens, la demande interne sur le produit thermal est en croissance continue.

En conséquence, les tendances internationales de la demande concernant le tourisme curatif et thermal s'articulent *grosso-modo* sur les critères de qualité qui sont de plus en plus mis en avant et l'innovation-diversification des produits qui seront plus appréciés.

Pour répondre aux objectifs de développement du tourisme curatif et de santé qui est un maillon important de l'économie nationale tunisienne, l'Office National du Thermalisme et de l'Hydrothérapie de la Tunisie (ONTH) est en train de suivre des politiques d'action. Dans la présente intervention, on va s'intéresser, à une action qui concerne la modernisation et la réglementation impliquant ainsi le travail de **la veille technologique** dont les principaux enjeux sont l'**Anticipation**, l'**Amélioration**, la **Créativité**, la **Gestion** et la **Compétence**.

## **HEALTH RESORT TREATMENT IN THE REPUBLIC OF BELARUS**

### **PALUYANAVA I.**

The Republican Centre for Health Resort Treatment, Republic of Belarus

The geographic location, reasonable prices, high quality of medical services and food, attractive climatic conditions, the factor of safety – all these factors make it possible to create an up-to-date well-developed system of health resort treatment and health improvement.

The development of health resort in Belarus is an important element of the state social and economic policy. There are 320 recreation organizations in Belarus: 113 health resorts and 207 health organizations.

The fund of health resorts and health organizations can provide healing services to nearly 1 million 300 thousand people a year. All resorts use mineral water and curative mud. The health resorts use mineral water from more than 90 wells.

The local mineral water has a unique composition and is used in balneotherapy: baths and swimming pools with mineral water, hydrocolonotherapy, mineral water drinking therapy.

214 deposits of mineral therapeutic underground waters were explored in our country.

The health resorts actively use the following types:

- high organic mineral water of low mineralization
- bromine and iodine-bromine waters
- radon water
- chloride-sodium mineral waters without specific active components of the chemical composition and physico-chemical properties.

All health resorts of our country widely use mud therapy. Currently in our country are widely used only sapropels for therapeutic

purposes. Organic substance of the sapropels contains the liquid and solid hydrocarbons, organic acids, alcohols, humic compounds with high biological activity. Besides the sapropels include chloride, sulfate and bicarbonate anions, calcium, magnesium, silicon, iron, zinc, bromine, chromium and other microelements. The compositions of sapropel include aminoacids, vitamins, enzymes, antibiotics. Mud therapy is applied in the form of common mud baths, mud baths with mineral water, local mud applications, mud tampons.

The combination of balneotherapy with mudtherapy is used at the health resorts for increasing and prolonging the action of mineral water and curative mud.

Treatment in our resorts is a combination of natural curative factors and innovative treatment technologies.

## **ARE THE NEGATIVE EFFECTS OCCURRING IN THE THERMAL MEDICINE?**

**PONIKOWSKA I., ZEGARSKI P.**

Department Balneology and Physical Medicine Collegium Medicum,  
Copernicus University in Toruń  
Clinical Thermal Hospital in Ciechocinek

It is widely believed that methods used in thermal resorts are completely secure, do not cause any side effects. However there are not the full evidences, because there is no monitoring of side effects and medical cases, at least in Poland. Adverse effects however happen. There for in this lecture I would like to present the possible adverse effects, medical cases and accidents, on bases of the dates from literature and my own observations.

During the thermal therapy we may observe the following group of negative consequences:1/ adverse effects and undesirable symptoms of treatment,2/ medical cases (errors),3/ accidents. Adverse effect can be observe two type: acute disorders which occurs immediately and a long term adverse effects which has happened sometimes after repeated application

We know that adverse symptoms occurs during most balneological and physical procedures. On the other hand, long term effects are not usually recognized.

Intensive kinezytherapy, ozon therapy, radonotherapy, magnetic field therapy and ultrasounds - generates free radicals. These were confirmed by many scientific researches.

Different problem and more dangerous are medical cases. According to Polish law, the medical case is: deterioration of the health status, illness or death of the patient as a consequences of proceedings, discordant with the current medical knowledge. These events happen as a result applying of the methods, products, medical devices and the incorrect diagnosis.



Medical cases are now often the reason for court hearings and claims for body damages.

According to our own observation, during the thermal treatment we can meet with the following medical cases :burns, frostbite, infections, hemorrhages, cardiac attacks and all kinds of injuries. The accidents which can happen during the treatment in thermal centers have no connection with thermal therapy, applying procedures or incorrect organization health care

Our conclusion: Negative consequences are happen during the thermal treatment , they should be monitoring. This allow to minimize them and improve the quality of medical services.

## **THE APPROPRIATE MOMENT FOR NEURO-REHABILITATION AFTER NEUROLOGICAL/NEUROSURGICAL IMPAIRMENT IN ELDERLY**

**PROFIR D., MARIN V., DEMIRGIAN S., IONESCU E.V., STANCIU L.E.**

Balneare and Rehabilitation Sanatorium, Techirghiol, Romania

**SURDU O.**

Ovidius University, Constanta

Balneare and physical therapy is acting on “disease phenomenon” not simply in causal sense, whereas between the therapeutic mean and pathologic process is standing the affected body as a whole, with its own multiple regulation systems and reactivity.

Activation of these complex systems by the natural factors is influencing cause-effect correlation, which establishes between the therapeutic agent and the affected organ/function.

The difficulty in assessing therapeutic effects is given by the fact that balneare therapy is a therapeutic complex, which includes, beside known factors (mineral waters, mud), change of climate, habitat, diet, lack or diminishing of daily stress. All these factors influence differently the final result of the treatment.

Complex adaptive responses of the body functions to systematic, sequential, dosed application of some stressing factors (thermal, chemical, mechanical) on skin or mucosa represent adaptation therapy.

The rehabilitation cure is placed in time after hospital/ambulatory moment, where are solved diagnosis problems or emergency intervention. The patient must arrive in balneare resort diagnosed and with stabilized vital functions.

Choice of the adequate moment and place for the patient with neurological /neurosurgical impairment it depends of understanding the adaptive capacity of the patient and the potential offered by natural therapeutic factors.

That's why timing for rehabilitation cure and selection of proper balneal resort are "sine qua non" conditions for an efficient rehabilitation treatment.

## **BALNEOLOGY AS A SCIENCE. INTEGRATION IN HEALTH AND HEALTHY LIFE EXTENSION.**

**RAZUMOV A.N.**

National Spa Association, Russia

Nearly 300 year history of Russian resorts and balneology demonstrates the dynamic development and prospects. Scientific research in recent years has shown significant opportunities for spa medicine both in restoring the health of patients, maintaining healthy life and prospects for prolonging the active life of aging population.

Last years, scientific data that have been obtained, significantly supplement the idea of the mechanism of formation of therapeutic effects of mineral waters, which allow to improve the methods of their use and to increase the efficiency of sanatorium treatment. Methods of spa treatment of such diseases as ischemic heart disease, hypertension, chronic obstructive pulmonary disease, peptic ulcer, diabetes mellitus, and many others have been developed. Proved the effectiveness of staying at the resort to enhance the functional reserves of the body, and resistance to radiation exposure, as well as improving reproductive function in men and women, improving and prolonging active life.

At the same time, there are quite a lot of unsolved scientific problems in balneology. Among them, the specificity of the action on the body of natural factors, the issues of medical climatology, the problems of adaptation in the resort. The question of the combined effect of physical factors, as well as the combined use of drugs with non-pharmacological technologies, remains insufficiently studied. We need to more widely examine and assess the role that balneology can play in the strategy of health protection, the prevention of aging.

In Russia there has been worked out the strategy of development of a sanatorium-resort complex aimed at improving the quality of treatment in the resorts of the country. The special attention to the development of the resort industry is evidenced by the introduction of the new discipline "Balneology" for teaching in medical schools. In these conditions, it is important to cooperate in scientific research, including international, on balneology and in the training and professional development of the staff.

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"Курортология как наука. Интеграция в охрану здоровья здоровых и продление жизни"

Курортология включает в себя бальнеологию, бальнеотерапию и бальнеотехнику, учение о лечебных грязях (грязелечение); курортную [климатологию](#) медицинскую (биоклиматология человека) и климатотерапию (аэро-гелио-талассотерапию); вопросы организации, планировки и строительства [курортов](#).

Современная курортология - медицинская научная дисциплина, изучающая целебные свойства природных физических факторов, характер их действия на организм человека, возможности их применения с лечебными и профилактическими целями на курортах и во внекурортных учреждениях, разрабатывающая показания и противопоказания для санаторно-курортного лечения и методы применения курортных факторов при различных заболеваниях.

Курортология использует достижения и методы смежных научных дисциплин - общей климатологии и гидрогеологии, физиологии, гигиены, экологии, психологии, эстетики и др.

Развитие курортологии как науки

О показаниях к лечебному назначению минеральных вод писал еще древнегреческий ученый Геродот (5 век до нашей эры). В

сочинениях Гиппократ (5 – 4 вв до нашей эры) упоминается о целебных свойствах пресной (речной) и соленой воды. Рекомендации об использовании природно-климатических факторов для лечения ряда заболеваний приведены в трудах А. Цельса (1 век), Галена (2 век) и др. Римскому врачу Архигену (1 – 2 века) принадлежит первая попытка классификации минеральных вод. В 15 веке Савонарола опубликовал «Трактат об итальянских минеральных водах» с описанием методов их лечебного использования. Свойства минеральных вод и механизм их действия на организм изучал Парацельс (16 век). В 16 веке изданы «Семь книг о теплых водах» итальянского врача Г. Фаллопия.

Основополагающие исследования по научной бальнеологии проведены в 18 веке немецким ученым Ф. Гофманом, изучавшим химический состав минеральных вод. С конца 18 века во многих странах Европы стали широко проводить грязелечение, однако только в начале 19 века – под медицинским контролем. В 1822 году шведский химик Й. Я. Берцелиус впервые произвел точные химические анализы карлсбадских источников и разработал методы определения состава минеральных вод. К концу 19 века на основе проведенных исследований по гидрогеологии, физикохимии и микробиологии минеральных вод и лечебных грязей, курортографии, курортной гигиене были сделаны попытки дать научное обоснование курортному делу и доказать необходимость развития науки о курортах. Клинико-физиологические основы бальнеоклиматологии были заложены в 18 веке Р. Расселом (Великобритания), в 19 веке – начале 20 века О. Либрайхом, К. Грёделем (Германия), Ш. Л. М. Дюран-Фарделем (Франция), Ч. Фругони, Л. Девото (Италия) и др. С начала 20 века большой известностью в Германии пользовались лаборатория бальнеофизиологии в Берлине, курортные клиники в Бад-Наухайме и Дрездене. В Гамбурге

была создана научная база для изучения медицинской климатологии. Успехи курортологии нашли свое отражение в трехтомном руководстве Дитриха и Каминера по бальнеологии и медицинской климатологии (1924 год). Во Франции по инициативе Бальнеологического общества в Париже основан (1914 год) Национальный институт гидрологии и бальнеологии, который наряду с вопросами общей гидрологии изучал курортные богатства страны, исследовал проблемы бальнео- и климатологии методами аналитической, биологической и физической химии и физиологии. На курортах страны созданы десятки биоклиматических станций и наблюдательных пунктов, изучающих состояние атмосферы и климато-погодные условия. Проблемам медицинской климатологии посвящены также труды кафедр Лионского и других институтов. На современных курортах ФРГ (Бад-Зальцфлен, Бад-Киссинген и др.) расположены институты профилактической медицины, бальнеологии, физических методов лечения и медицинской реабилитации. Академия наук Австрии научно-исследовательский бальнеологический институт в Бадгастайне, в Бадене близ Вены функционирует институт бальнеологии и ревматических заболеваний. В Швейцарии на курорте Давос влияние климата на здоровье изучает институт высокогорного климата. В Италии вопросам курортологии посвящены исследования, проведенные в отделении гидробальнеологии Института медицинской гидрологии (Рим), а также в Институте медицинской гидрологии и климатологии Миланского университета. Профессор этого Университета Умберто Силимене является Президентом ФЕМТЕК, автором многих книг по курортологии, климатологии и метеопатологии. В 1951 году М. Мессини издает «Трактат о клинической гидроклиматологии», а также обзор «Минеральные воды мира» (1957 год). В них нашли отражение важнейшие вопросы лечебного применения природных факторов.

В США создан (1958 год) Институт медицинской климатологии (Филадельфия) с отделениями бальнеологии, метеорологии, геофизики и биологии, который изучает курортные ресурсы страны и вносит свои рекомендации по развитию санаторно-курортного дела. Известный центр физических методов лечения и медицинской реабилитации находится на курорте Хот-Спрингс. В Японии вопросами курортологии занимается Институт бальнеотерапии на курорте Беппу.

Значительная роль в изучении лечебных свойств курортных факторов и развитии курортного строительства принадлежит национальным и международным обществам, основанным, главным образом, во второй половине XIX и первой половине XX века. В 1921 году в Лондоне создано Международное общество медицинской гидрологии, объединившее (1970-е годы) научные общества и ученых из 40 стран (с 1928 года – СССР), которое проводит международные конгрессы 1 раз в 4 года, издает в Лондоне журнал «Archives of medical hydrology» (с 1922 года)

Активно развивается курортология в Португалии, где в Университете города Порто преподает профессор Педро Кантоста. В Университете Мадрида профессор Маравер является координатором многих научных проектов в области курортологии.

Одним из первых национальных обществ было Немецкое бальнеологическое общество (1878 год), деятельность которого в ФРГ продолжает так называемое Объединение немецких врачей-курортологов, которое совместно с аналогичным австрийским обществом издает журнал прикладной курортологии. Среди наиболее крупных национальных обществ – Ассоциация итальянских бальнеологов, климатологов и физиотерапевтов, Японское бальнеологическое общество, Французское бальнеологическое общество, которое тесно связано с Институтом бальнеологии и климатологии в Париже



(его печатный орган – современное название «La presse thermale et climatique» - старейший в Европе, издается с 1857 года).

В СССР быстрое развитие курортологии опиралось на значительный опыт, накопленный отечественными учеными. Первые научные исследования в России, посвященные изучению природных лечебных факторов, относятся к XVIII веку. С. Г. Гмелин исследовал состав липецких минеральных вод (1771 год), И. Ф. Гюльденштедт (1773 год) и П.С. Паллас (1793 год) описали природные ресурсы и свойства некоторых минеральных вод на Северном Кавказе. Ф. П. Гааз (1811 год) и А. П. Нелюбин (1825 год) положили начало научному исследованию Кавказских Минеральных Вод.

Было показано общегосударственное значение этой группы курортов, дано описание кисловодского Нарзана и многих источников в Ессентуках и Железноводске. В 1855 году вышло в свет «Полное, систематическое, практическое описание минеральных вод, лечебных грязей и купаний в Российской империи» К. И. Грума. Видные русские ученые XIX века – врачи, гидрогеологи, химики, климатологи – Ф. А. Баталин, В. И. Вернадский, А. П. Герасимов, Н. Н. Славянов и другие, выступая на съездах и в печати, пропагандировали идеи развития курортного дела в России, изучения и широкого лечебного применения курортных факторов. Значительное влияние на формирование клинических основ курортологии оказали Г. А. Захарьин, Н.И. Пирогов, С.С. Налбандов, Н.Н. Бурденко и другие ученые.

Грязелечение в Крыму стало основой российской научной школы пелоидотерапии. В 1828 году в Саках открылся первый в мире грязевой курорт, а десять лет спустя - отделение Симферопольского военного госпиталя. В период Крымской войны (1853—1856 годы) по предложению Н. И. Пирогова в

Саках стали практиковать лечение грязями раненных в позвоночник и спинной мозг.

Профессор-куртолог С. С. Налбандов и академик Н.Н. Бурденко, основоположник нейрохирургии в России, разработали научные основы грязелечения. В Сакском санатории им. Н. Н. Бурденко были разработаны уникальные методы грязелечения больных с травматической болезнью спинного мозга.

Было доказано, что грязелечение стимулирует обмен веществ, способствует рассасыванию очагов воспаления. Улучшая питание тканей, вызывает размягчение рубцов, ускоряет процесс сращения кости после перелома, уменьшает тугоподвижность и увеличивает объем движений в суставах, улучшает работу надпочечников. Лечебная грязь обладает противомикробным действием: приложенная к коже или слизистым оболочкам, поглощает содержащиеся на их поверхности бактерии; в грязи присутствуют также вещества типа антибиотиков.

Значительную роль в создании теоретических основ курортологии сыграла советская физиологическая школа И. П. Павлова. Показано избирательное действие физических факторов на различные органы и ткани организма человека, в том числе и при разных формах патологии. Установлено наиболее благоприятное действие малых доз лечебных физических факторов, как естественных, так и получаемых искусственно.

Особое внимание уделяется изучению вопросов использования курортных факторов для профилактики, лечения и медицинской реабилитации при сердечно-сосудистых заболеваниях (в том числе инфаркте миокарда и нарушениях мозгового кровообращения), болезнях органов дыхания и пищеварения.

В развитие курортов Кавказских Минеральных Вод, их техническое благоустройство, привлечение научных сил важный

вклад внес С. А. Смирнов. В 1863 году по его инициативе в Пятигорске было создано первое в России научное общество по курортному делу – Русское бальнеологическое общество, главной задачей которого было «способствовать развитию самостоятельности русской бальнеологии..., помогать всякому самостоятельному бальнеологическому исследованию». Общество возглавило деятельность по развитию отечественных курортов, их благоустройству и организации лечебной работы на научной основе.

В 1867 году, по инициативе О. О. Мочутковского создано Бальнеологическое общество в Одессе. В 1902 году в Ессентуках было учреждено Общество врачей, практикующих на Кавказских Минеральных Водах, активно участвующее в жизни курортов. основоположниками учения о лиманах и лечебных грязях в России считаются А. М. Вериго, О. О. Мочутковский, Я. Ю. Бардах, Е. М. Брусиловский, А. А. Лозинский.

В конце XIX века были начаты первые изыскания по гидрогеологии. Горный инженер М. В. Сергеев с 1885 года исследовал гидроминеральные ресурсы Липецка, Ессентуков, Железноводска, Сочи, Саки, Старой Руссы и других курортов. Значительную роль в становлении климатологии, как самостоятельной дисциплины, сыграли труды русского климатолога А. И. Воейкова.

По инициативе Российского общества охранения народного здоровья, с конца XIX века созывались съезды бальнеологов. На первом съезде в 1898 году был выдвинут проект создания бальнеологического института. Решение учредить в Пятигорске Институт экспериментальной бальнеологии с клиническими отделениями.

Развитие курортологии, как самостоятельного научного раздела, началось после Великой Октябрьской социалистической революции. Тогда же возник и сам термин «курортология». С первых дней организации курортов для трудящихся

Наркомздрав СССР привлек к курортному делу ведущие научные силы. В частности, в изучении курортных ресурсов принимали участие Академия наук СССР и организованная при ней комиссия по изучению минеральных вод под председательством академика В. И. Вернадского. Только в 1921 – 1929 годах состоялось 6 съездов по научно-организационным вопросам развития курортного дела. Уже на первом съезде (февраль 1921 года) была развернута широкая программа научно-исследовательских работ, предусматривавшая организацию пяти НИИ на курортах и Центрального института в Москве. В 1920 году создан первый в СССР Бальнеологический институт в Пятигорске, вслед за ним – ряд других институтов. Сеть учреждений, изучающих проблемы курортологии в СССР включает специализированные НИИ курортологии и их филиалы, а также ряд других научно-исследовательских учреждений, кафедры ряда медицинских институтов и институтов усовершенствования врачей, специальные лаборатории ВЦСПС на курортах и т. д.

В 1921 году в Москве по инициативе В. А. Александрова создана Курортная клиника, в 1926 году реорганизованная в Центральный институт курортологии (основатель и первый руководитель Г. М. Данишевский). В 1958 году институт объединен с Государственным институтом физиотерапии (основан в 1920 году) в Центральный институт курортологии и физиотерапии Министерства здравоохранения СССР – координирующий центр исследований в области курортологии.

С целью изучения курортных ресурсов страны проведены многочисленные комплексные экспедиции, в состав которых входили врачи-куртологи, климатологи, гидрогеологи, физики, химики и другие специалисты. Разведано свыше 1500 месторождений лечебных минеральных вод и свыше 300 месторождений лечебных грязей, изучены процессы их происхождения, их состав и свойства. Разработана

классификация подземных минеральных вод, изданы карты месторождений минеральных вод и грязей. Исследованы климатические ресурсы многих курортов. Разработаны теоретические основы бальнеотерапии, грязелечения, медицинской климатологии и соответствующие лечебные методы. Предложены новые методы радонотерапии, разработаны оригинальные способы приготовления искусственных минеральных вод. Определены лечебные и столовые минеральные воды, пригодные для разлива в бутылки, утвержден ГОСТ на них.

Важную роль в разработке теоретических и методических вопросов курортологии играют научные общества. В 1925 году учреждено Московское научно-курортное общество (первый председатель Н. И. Тезяков), которое в 1936 году преобразовано во Всесоюзное научно-курортное общество. В 1952 году создано объединенное Всесоюзное общество физиотерапевтов и курортологов, которое провело 7 всесоюзных съездов. Печатный орган общества – журнал «Вопросы курортологии, физиотерапии и лечебной физической культуры» (основан в 1923 году, выходил под разными названиями – «Курортное дело», «Курорты, физиотерапия и рабочий отдых», «Физиотерапия», «Вопросы курортологии» и др.

С 1996 года функционирует Национальная Курортная Ассоциация, которая способствует научному развитию курортологии, внедрению научных достижений в практику санаториев, популяризации курортов среди населения.

Курортология в других, бывших социалистических странах Европы, за сравнительно короткий период социалистического строительства достигла большого прогресса. Почти во всех странах были созданы государственные научно-исследовательские бальнеологические и климатологические институты, в ряде стран на курортах организованы филиалы этих институтов или медицинских академий.

Разрабатывались научные основы лечебно-восстановительных мероприятий с использованием курортных факторов. Проводилось изучение природных лечебных факторов, исследование их физико-химических свойств, изучение потребности населения в санаторно-курортной помощи, разработка показаний и противопоказаний к направлению больных на курорты. Проводился анализ непосредственных и отдаленных результатов курортного лечения. На ряде курортов были организованы центры восстановительного лечения больных, утративших трудоспособность.

Проблемы курортологии в Болгарии разрабатывал НИИ курортологии, физиотерапии и реабилитации Софийской медицинской академии (на курорте Овча-Купел) с филиалами (на курорте Горна-Баня в Варне и др). С 1964 года Министерством здравоохранения и Обществом физиотерапевтов издается журнал «Курортология и физиотерапия».

В Венгрии функционирует Государственный институт ревматологии и бальнеологии, с 1960 года Будапештское общество ревматологов и бальнеоклиматологов издает журнал «Magyar Balneologia».

Ведущим научно-методическим центром по проблемам курортологии в ГДР являлся НИИ бальнеологии и курортологии на курорте Бад-Эльстер. С 1949 года в Лейпциге выходит журнал «Zeitschrift für Rhysotherapie» (Издает Общество физиотерапевтов).

В Польше проблемы курортологии разрабатываются Познанским бальнеоклиматологическим институтом и его филиалами на курортах (Иновроцлав и др.) и в расположенных на многочисленных курортах клиниках Варшавской, Краковской, Шлёнской и других академиях. Общество бальнеоклиматологов

и физической медицины издает (с 1959 года) журнал «Problemy uzdrawiskowe».

Ведущим по проблемам курортологии в Румынии являлся Бухарестский НИИ ревматологии и физиотерапии, с 1950 года издается журнал «Balneologia».

В Чехословакии функционирует НИИ бальнеологии на курорте Марианске-Лазне (с 1971 года издается на немецком языке журнал «Balneologia Bohemica»), Институт ревматологии на курорте Пьештяни. Вопросы курортологии освещает также журнал Общества физиотерапевтов и ревматологов и Общества врачей имени Я. Пуркине «Fysiatricky a reumatologicky vestnik» (с 1923 года).

В Югославии проблемы курортологии изучают различные научные учреждения в республиках: Центр физической медицины в Белграде (Сербия) с филиалом на курорте Матарушка-Баня; Центр по лечению ревматических заболеваний в Загребе (Хорватия) с базовым санаторием на курорте Дарувар; Институт бальнеологии медицинского факультета Сараевского университета (Босния и Герцеговина) на курорте Илиджа; Центр талассотерапии медицинского факультета Загребского университета (Хорватия) на курорте Опатия и другие.

Интегрирующую международную роль в развитии курортного дела, климатологии, термализма, спа-технологий и создании современных бальнеологических комплексов играет ФЕМТЕК, созданный в сентябре 1937 года, которому в этом году исполняется 80 лет.

Сделав научный анализ достижений в становление курортологии как медицинской научной дисциплины, необходимо сформулировать новые направления использования природных лечебных факторов и раскрыть механизмы их воздействия на организм человека.

## В НАСТОЯЩЕЕ ВРЕМЯ ФОРМИРУЮТСЯ НОВЫЕ НАПРАВЛЕНИЯ ИСПОЛЬЗОВАНИЯ ПРИРОДНЫХ ЛЕЧЕБНЫХ ФАКТОРОВ.

- накапливается все больше данных о существенном влиянии лечебных физических факторов на действие других лечебных средств, что позволяет говорить о терапевтической интерференции. Уже сегодня практическое значение имеют сведения о возможности их использования для повышения активности лекарств, уменьшения их побочного действия, управления фармакокинетикой и фармакодинамикой;
- природные физические факторы, методы гидротерапии широко используются в спа- и велнесс индустрии.

Среди основных научных достижений, полученных в последние десятилетия в России, позволяющих совершенствовать методики применения минеральных вод и лечебных грязей, следует отметить следующие:

- разработка теоретических основ и общих представлений о механизмах первичного действия и поглощения бальнеофакторов;
- исследования по таким проблемам, как доза-эффект, специфичность действия минеральных вод, временная организация бальнеотерапии, комбинирование и сочетание бальнеофакторов;
- определение значения концентрации основных компонентов минеральных вод в эффективности применения;
- изучение особенностей действия бальнеофакторов при сочетанной патологии;
- разработка новых методик бальнеотерапии (минеральные воды при ИБС с нарушением сердечного ритма, сахарном диабете, хроническом бронхите и др.); (пелоидотерапии при сердечно-сосудистой патологии: ИБС, гипертоническая болезнь, дисциркуляторная энцефалопатия);



- научное обоснование применения «продолжительной» (продолжительностью 2-3 месяца) бальнеотерапии (например, при ИБС с сердечной недостаточностью);

- изучение новых сторон действия питьевых минеральных вод (формирование срочных и долговременных адаптивных реакций, научное обоснование питьевого лечения при метаболическом синдроме, сахарном диабете, ИБС, гипертонической болезни, в онкологии);

- изучение вопросов сочетанного использования бальнео- и фармакотерапии с целью повышения эффективности лечения, уменьшения доз медикаментов, преодоления резистентности к ним и т.д.;

- создание новых современных высокотехнологичных бальнеотерапевтических устройств и комплексов.

Созданные на основании научных достижений медицинской курортологии бальнеотерапевтические технологии определяют возможность оказания корректирующего влияния на многие важные патогенетические звенья развития и прогрессирования различных заболеваний, и целесообразность их применения для профилактики, лечения и реабилитации.

**СРЕДИ ЗНАМЕНАТЕЛЬНЫХ ДОСТИЖЕНИЙ БАЛЬНЕОЛЕЧЕНИЯ В МИРЕ СЛЕДУЕТ ОТМЕТИТЬ:**

- успешный опыт лечения кожных заболеваний: (в частности атопического дерматита, псориаза) горячими термальными водами на курорте Кусатсу (Япония), высококонцентрированной (320 г/л) соляной водой Мертвого моря (Израиль), в основе которого лежат бактерицидные и противовоспалительные эффекты используемых факторов;

- получены хорошие результаты применения бальнеофакторов в лечении и реабилитации больных с

воспалительными (ревматоидный артрит, анкилозирующий спондилит) и невоспалительными (дорсопатии, фибромиалгия, остеоартрит) заболеваниями костно-мышечной системы на Мертвом море (Израиль), на курорте Бад Хофгайстен (Австрия), Сент-нектар, Виши (Франция), Черкесоло (Венгрия), на курортах Испании, Португалии, Италии с применением термальных минеральных вод, грязевых аппликаций, радонолечения, углекислых вод.

В основе лечебного действия указанных факторов лежат анальгетические и противовоспалительные эффекты.

#### ПЕРСПЕКТИВЫ НАУЧНЫХ ИССЛЕДОВАНИЙ В ОБЛАСТИ БАЛЬНЕОЛОГИИ, ВОДОЛЕЧЕНИЯ И ГРЯЗЕЛЕЧЕНИЯ.

Известно, что научно обоснованным способом получения достоверных результатов является проведение контролируемых клинических исследований. При их проведении используются методы контроля, позволяющие получить наиболее объективные результаты: рандомизация, сравнительные исследования, слепые исследования. Кроме того, имеет значение размер выборки, определение правильных конечных точек. Необходимо проведение крупных многоцентровых исследований по принципам доказательной медицины, золотым стандартом которой является рандомизированное, контролируемое, двойное слепое исследование.

Не менее важная задача - оптимизация известных методов, теоретические основы действия которых были разработаны еще в XX веке. Под оптимизацией понимают выбор параметров, условий и способов применения бальнеофакторов, обеспечивающих максимальный

(оптимальный) терапевтический результат. До настоящего времени преимущественно разрабатывались параметрическая и хронобиологическая оптимизация. По-видимому, для оптимизации бальнеотерапевтических воздействий могут быть использованы параметры биоритмов организма.

Предметом активных исследований должна стать проблема терапевтической интерференции (взаимовлияния) бальнеологических, физических факторов и лекарств. Это позволит не только оптимизировать комплексную терапию, но и будет способствовать обоснованию и разработке новых сочетанных методов бальнеотерапии и грязелечения.

Представляются актуальными исследования в поддержании здоровья здоровых, в первую очередь, по определению повышения функциональных резервов, иммунитета, сохранении высокой способности к адаптации и реадаптации, влиянию курортного лечения на уровень заболеваемости, продолжения жизни.

Существует ряд нерешенных задач, решение которых будет способствовать развитию научной и практической бальнеологии.

Среди них следует подчеркнуть следующие:

- долгосрочная оценка влияния бальнеотерапии с определением качества жизни больных (доказательство профилактического значения этих методов);
- выработка прогностических критериев адекватности выбора методов бальнеотерапии с лечебными, профилактическими и реабилитационными целями;
- установление закономерностей «доза-эффект» и оптимальных температурных параметров для лиц с определенными нарушениями функциональных систем организма;

- разработка рекомендаций для более широкого использования гидротерапии (методики применения пресной воды, ароматерапия) с целью повышения адаптационно-компенсаторных возможностей организма;
- изучение влияния питьевых вод сложного химического состава (с различной минерализацией и содержанием газовой фазы) в связи с разработанной классификацией минеральных вод для наружного применения и выделением подтипов каждого вида вод;
- развитие физиогенетики, что позволит безошибочно выбирать и прогнозировать эффективность, в частности, и бальнеотерапии;
- разработка дифференцированных подходов к определению продолжительности санаторно-курортного лечения для конкретных категорий больных без ущерба для его эффективности;

Необходимо развивать направление превентивной персонифицированной курортологии с целью разработки индивидуальных программ по сохранению здоровья здоровых и анти-эйджинга.

Только при таком подходе в использовании параметров воздействия, адекватных возможностям организма больного, курортные факторы будут содействовать развитию процессов восстановления, компенсации или адаптации — основных процессов саногенеза.

Использовать естественные механизмы защиты организма, применяя природные или преформированные физические факторы для победы над болезнью – гуманнейшая задача любого общества.

## **ANALYSIS OF THE FUNCTIONAL LEVELS AND TEMPORAL CHARACTERISTICS OF BIOLOGICAL EFFECTS OF CONSUMPTION OF MINERAL WATERS OF THE CAUCASIAN MINERAL WATERS REGION.**

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The Caucasian Mineral Waters is a unique balneological resort of Russia with various types of mineral waters (MW), which combine into five genetic groups: carbon dioxide-hydrogen sulphide, carbonate, carbonic chloride-hydrocarbonate sodium (hydrochloric-alkaline), radon weakly-carbonate, nitrogen-carbonaceous terms. The operational reserves of the Pyatigorsk field's MW are 2809.8 m<sup>3</sup> / day (45 wells and sources). Drinking MW treatment is used for diseases of the gastrointestinal tract, metabolism, excretory and cardiovascular system. Short-term metabolic reactions (single dose) and effects after the course of procedures (14-21 days) are distinguished in the structure of the biological effect of the MW.

**Materials and methods.** The studies were performed on 150 rats of the Wistar line of both sexes of 3 months of age weighing 250-280 g, the MW was injected per os at 1.5 ml per 100 g of animal weight. Control course of tap water. Serum free thyroxine, triiodothyronine, cortisol, dehydroepiandrosterone sulfate, insulin, glucose, total protein, total cholesterol, triglycerides were measured in serum.

**Results.** Biological effects of the MW depend on the level of their mineralization (M) and chemical composition. MW "Essentuki 17" (M-12.8-13.2 g / l) has insulin stimulating effect in the early phase of its secretion, the course of the MW with M 3.0-5.5 g / l leads to a lower insulinotropic effect. The hormonal response includes substrate (glucose and lipid) and intracellular (allosteric enzymes, cAMP, cGMP, Na, K-Ca-ATPase) functional levels of metabolic

regulation. There are also gender differences in the hormonal-substrate effects of the MW. So, the level of dehydroepiandrosterone sulfate (DHEA) after a course of sulphate-hydrocarbonate-chloride calcium-sodium MW with M of 5.1 g / l, CO<sub>2</sub> - 1.3-2.2 g / dm<sup>3</sup> in males increased at 2.5 times, cortisol and thyroxine by 1.5 times ( $p < 0.01$ ), while the insulin level did not change significantly. Simultaneously after the MW course, the decrease in triglyceride levels in females was 1.5-2 times ( $p < 0.05$ ), in males the decrease in total cholesterol in the blood was 1.2-1.5 times, mainly due to HDL. Between the glucose and DHEA in the blood, a direct relationship was recorded ( $r = + 0.8$ ,  $p = 0.01$ ).

Thus, the time parameters of response reactions to a single and course administration of the MW are immediate or remote metabolic reactions, the functional level of biological effects depends both on the mineralization and on the composition of the mineral waters used. Medium-mineralized MWs have an insulintropic effect, calcium and magnesium-containing MWs activate the intracellular systems of metabolic processes, mediating them through the active ion transport system, cellular secondary messengers, and by modifying the microviscosity of membranes by maneuvering the balance of the free radical oxidation of membrane phospholipids and the antioxidant system protection.

## THE FRENCH ASSOCIATION FOR THERMAL RESEARCH (AFRETH)

### ROQUES LATRILLE C.F.

National Academy of Medicine, Paris

AFRETH Scientific Committee, Paris

Physical & Rehabilitation Medicine, Toulouse III University, France

Since its creation in 2004 October, the French Association for Thermal Research (AFRETH) fully implemented 12 call for projects; 12 Millions € have been engaged and/or expended.

	<b>PRE PROJECTS</b>	<b>ELIGIBLE</b>	<b>SCIENTIFICALLY VALIDATED</b>	<b>FINANCIAL SUPPORT</b>
AMB CLINIC.	112	74	57	39
SAFETY	4	3	3	2
PHYSIO PATH.	13	6	6	4
<b>TOTAL</b>	<b>129</b>	<b>83</b>	<b>66</b>	<b>45</b>

22 papers have been published in english speaking journals with impact factor. 10 clinical studies (RCT) have been published; 8 studies fully implemented are in the writing or submitting process; 6 RCT are in progress.

The main scientific achievements can be summarized : i) a more comfortable body due to less pain from musculo-skeletal origin (Thermarthrose, Rotatherm, Itilo) or venous origin (Thermes & Veines) and more abilities in patients with musculo-skeletal conditions (Thermarthrose, Rotatherm, Itilo), or after treated breast cancer (Pacthe). A better weight control in over weighted patients (Maathermes), in patients with metabolic syndrome (Prisme) or after treated breast cancer (Pacthe) ; ii) a stress under better

control in patients with generalized anxiety disorders (Stop-Tag), or after treated breast cancer (Pacthe)(patients improved depression and sleep disturbances), allowing a psychotropic drugs (benzodiazepins) withdrawal (Specth) ; iii) a more healthy life style due to patients' education in metabolic conditions (Prisme), after treated breast cancer (Pacthe), in chronic venous conditions (Veinothermes), in elder with cognitive decline risk (MAPT, T CAP) ; iiiii) and at the end a better quality of life for patients after breast cancer (Pacthe), for patients with chronic cuff tendinitis (Rotatherm), chronic venous insufficiency (Thermes & Veines) (Veinothermes), generalized anxiety disorder (Stop-Tag). But studies concerning respiratory diseases, sick leave patients with chronic low back pain, deep venous thrombosis sequelae, failed to enrol a sufficient number of patients to be contributive.

Some methodological comments can be made. The immediate versus delayed treatment paradigm is usually well accepted by the patients. The enrolment of the patients has to be efficient and realistic; the direct sollicitation of the patients, through mass media, can offer a relevant approach. The actual medical benefit demonstration needs a clinical (and relevant) main endpoint ; as they show thresholds of efficiency, levels of improvement such as MCII, responders patients, PASS, 5% weight reduction... are particularly clinically relevant. The treatments of patients (balneotherapy) and controls have to be determined and reported. Usual care can be an helpful control treatment.

The informations given by the results of the studies, after the scientific publication, have to be communicated to doctors and patients through massmedia: about 120 papers about balneotherapy are published, every year, in the french newspapers.



**OPINION OF THE FRENCH NATIONAL ACADEMY OF MEDICINE ON THE REQUISITION OF THE FRENCH GOVERNMENT CONCERNING THE HEALTH RISKS RELATED TO I) THE PRESENCE OF BARIUM IN CLAYS CONSTITUTING THE THERMAL MUDS AND II) THE ABSENCE OF SANITARY CONTROL OF THE THERMAL MUD.**

**ROQUES-LATRILLE C-F., TRÈVES R., QUENEAU P., BONTOUX D.**

Académie Nationale de Médecine, Paris, France

Every year about 6,000,000 mud treatments are delivered in France to 400,000 patients.

The Health Department asked the perception of the National Academy of Medicine i) on barium observed in clays used for mud therapy and ii) on the opportunity to organize a health control of muds. The report was elaborated from a literature analysis and exchanges with persons involved in mud therapy (scientists and professionals). Findings and recommendations are exposed.

Thermal muds, directly applied on the skin or as poultices, deliver heat and elements present in the substrates, alleviating pain in patients mainly with rheumatic conditions. The substrates are mainly made of clay and peat which are mixed with natural mineral water extemporaneously or previously (to favour some maturation of the muds). 5 to 8 kilogrammes of dry material are necessary for one patient's treatment. The treatments are made of 9 to 18 applications for at least 10 minutes for each treatment.

Muds are made and delivered with strong companies peculiarities. It would be suitable to have an acceptable standardization of muds preparation and delivery. The poultices would have always to be wrapped with permeable envelops.

Muds applications is quite well tolerated except a few adverse events due to heat. But a systematic clinical vigilance of thermal treatments' adverse events has to be organized in France.

Workers of the thermal care facilities can be concerned as some have to handle muds and other are exposed to pulverulent clay. Protective measures (gloves, masks, ...) have to be implemented for facilities workers and caregivers.

Barium was observed in clays but the measured rates depend on the chemical techniques. An agreement of chemists and toxicologists is compulsory for the chemical techniques.

Transdermal absorption can be discussed for ionized Barium and/or soluble salts. The data are few, the issue remains unclear. So investigations have to explore transfers of barium from muds to the blood. The data obtained from biological investigations and vigilance would draw conclusions on the (un)suitability of the presence of barium in thermal muds. These conclusions could be questionable for other heavy metals.

A better knowledge of the properties of muds substrates is compulsory.

A legal regulation is applied to Natural Mineral Water but not to thermal muds. Aquacert<sup>®</sup>, a certification process, based on the "Thermal Good Practices Guidelines", includes regular supervising of physical, chemical and microbiological properties of thermal muds. This assessment is based on standards made for i) soils accepting sewage sludge (chemical and physical standards) and ii) cosmetics substances applied on the skin of human beings (microbiological standards).

These different standards have to be updated and completed. The assessment of the data provided by certification, favoured by relevant incentive, would be helpful for the discussion between a legal regulation and the « obligation of means » for thermal muds health control and supervising.

The National Academy of Medicine i) proposes findings and recommendations to the Health Department and ii) emphasizes the need of a supervision of the implementation of the recommended measures.

## **HEALTH INSURANCE FUNDS AND HEALTH SPA SERVICES. THE CASE OF UNISALUTE (ITALY)**

### **SANTUARI A.**

European Association of Patients and Users of Thermal Centres (EAPTC)  
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Health care services are no longer covered by national health systems only. Other actors, such friendly societies and health insurance funds, play a significant role in the provision of healthcare around the world, especially in Europe.

The workshop aims at understanding how these funds work and operate with specific reference to health SPAs services.

Unisalute is a joint stock company that has been long carrying out its activities in the field of health insurance coverage in Italy. Its experience and products are expected to be useful for the participants of the Jubilee to grasp conditions and terms of an increasing market opportunity for thermal centres.

## **PELOID THERAPY WITH THERAPEUTIC MUD OF ANAPA AT DORSOPATHIES OF THE LUMBOSACRAL SPINE IN THE SANATORIUM-RESORT COMPLEX "DILUCH"**

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Sanatorium-Resort complex "DiLUCH", the Resort town of Anapa

One of the most valuable natural healing factors of the Russian southern climatic, balneological and mud resort of Anapa is therapeutic mud. Researchers-balneologists are constantly studying the therapeutic potential of peloidotherapy (Ionov P.K. 2007, Rogozyan B.N. 2010, Sevryukova V.S. 2016, Kholopov A.P., 2013). Silt sulphide mud of Kizitashsk deposits are recognized as one of the best in Russia, meeting the requirements for therapeutic and preventive use. Positive therapeutic effect of Anapa mud is provided by plasticity, water retaining capacity, [low conductivity](#), low heat convection, adsorbing capacity, combined, adaptive immunomodulatory effect (Agapov A.I., 1999; Shustov L.P., 2007). Indications for peloidotherapy are diverse, its use is relevant for dorsopathies of the lumbosacral spine (DoLSS) (ICD-10), which prevalence rate is 85% (Sadokha K.A., 2014). There was performed a randomized cross-sectional case-control study of 156 patients divided into 4 groups (men n = 118, females n = 38, mean age  $57.4 \pm 3, 1$  years) with an instrumentally confirmed diagnosis of DoLSS at the Sanatorium-Resort complex "DiLUCH" for an efficacy evaluation and justifications of peloidotherapy methods. Group I (n = 52) included patients with DoLSS without concomitant diseases received thin-layer mud applications; group II included patients with DoLSS and a pathology of the cardiovascular system (CVS) (n = 55) - galvanic mud therapy; and the group III for patients with DoLSS over 60 years old (n = 38) - electrophoresis of mud extract; group IV (n = 11) – a control without peloidotherapy. The exposure was carried out

for 20 minutes at LSS, No. 10, alternate days. As a result, it was statistically significant, that after treatment in groups I and II a pain syndrome was stopped in 100% ( $\chi^2 = 4.54$  and  $\chi^2 = 3.79$ , respectively,  $p < 0.05$ , visual analogue scale), mobility increased (by 10% and 7%) in LSS, quality of life (QL) (SF-36) parameters improved, the tendency to normalize blood calcium (from  $1.81 \pm 0.8$  mmol / L to  $2.0 \pm 0.8$  mmol / L in the Group I) was marked. In the Group III pain syndrome was stopped in 76%, the parameters of the emotional component of QL improved in 100%. There were no statistically significant changes in the control group. The effectiveness of using Anapa mud in the treatment of the musculoskeletal diseases was proved. Different methods allow the use of peloid therapy in persons with DoLSS and CVS pathology, and in the elderly.

## **THE USE OF HYDROPATHY FOR DISEASE PREVENTION**

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Before, we spoke about heart disease prevention in Medical Spa “White Nights”. This remains a pressing issue to this day. The statistics on risks from sudden death caused by cardiovascular diseases in Russia and Europe shows disappointing numbers.

At our medical Spa, we analyzed a group of patients aged 40 to 75, with no cardiovascular accidents in their medical history. They account for 30% of the overall annual number of patients. We made a selection based on these patients.

The following factors were significant to us: age (under 70), BMI over 25,0, increased blood pressure, smoking, and patients in process of forming of metabolic syndrome, when target organs are affected. Commitment to treatment was another significant factor to us. All our patients have a high income level, all of them have higher or specialized secondary education, which is consistent with our expectations of their high commitment to therapy.

The psychological tests showed increased levels of stress and anxiety in some patients.

18% of patients had low cardiovascular risk on SCORE scale, 5% had moderate risk, 43% had high risk, and 34% of patients had very high cardiovascular risk.

Today we are speaking about hot springs treatment, balneo and hydrotherapy, and we consider it, along with sport activities, and dietary intervention, to be a part of cardiovascular disease prevention. Moreover, hydro- and balneotherapy are among the basic methods of health resort treatment.

The body, as a whole, reacts to a hydrotherapeutic procedure in complex, with the cardiovascular system showing the strongest reaction. If conducted correctly, a hydrotherapeutic procedure causes the following reactions: better metabolism, increased speed of biochemical reactions in the body, better microcirculation, vascular distention, healthy influence on blood pressure and cardiac function, better secretory function of organs, better locomotor system function, change of smooth muscle and somatic musculature tonus, as well as in urination, blood composition and viscosity, it also causes redistribution of blood in the body, etc.

With developed methods, we can improve tissue metabolism, enhance lymphatic drainage effect, lower stress levels. Hydropathic and balneo- procedures are classified into the following categories: cold, hot, and indifferent temperature procedures. Knowing and understanding the effects of cold and hot baths, we chose indifferent temperature baths.

Cool and cold water fist causes skin vessels constriction, increase in blood pressure, and increased heart function; excitement of the nervous system. Cold baths may cause an unwanted effect, that is third degree reaction, when the vessels remain dilated, their walls lose their tonus, blood flow slows down, venous stasis.

Hot baths first cause a short-term vessel spasm, then their dilation, heartbeat acceleration and labored heart function, like with cold baths, blood pressure increases, as well as nervous system excitability. The patient quickly grows tired.

It is obvious that by changing the water temperature, type, and length of procedure, we can purposefully influence the body, evoking desired reactions.

When thermoreceptors are stimulated, the mechanisms of central neuro-endocrine thermoregulation are activated. Both hot and cold

procedures first cause nervous system function over-excitement, and then depression. With the water temperature close to indifferent, the first phase (vessel constriction) drops out. The reaction begins with a very slow, gradual, vessel dilation, and does not lead to any significant changes in the blood flow.

Once the matrix of procedures for cardiac prevention based on the patient's portrait is complete, we prescribe hydro- and balneo-procedures in a certain order and according to certain principles: indifferent bath temperature, indifferent douche temperature, short sessions, 6 to 7 sessions. We treated increased blood pressure with iodine bromine baths with the following mineralization: iodine 1- mg/l, bromine 25 mg/l; we used aromatherapy baths for increased anxiety level, depression, with blood pressure under 130/80 mm Hg; for obesity and excess body weight (BMI over 25) we prescribed procedures with mostly-mechanical manipulation: underwater pressure massage, Charcot's douche, active procedures in the water; to patients with BMI equal to or less than 25 we prescribed circular, fan douche, hydromassage baths

In between the hydrotherapeutic procedures the patients had indoor therapeutic exercises, and took walks.

Upon the completion of hydrotherapeutic procedures and after the treatment course was completed, the following parameters were analyzed: change in oxygen saturation, heart rate and blood pressure control, subjective wellbeing assessment.

Over the 14-day course of treatment we managed to lower the risk of death from cardiovascular diseases in our patients by 5% due to smoking cessation, and decrease in blood pressure, and to transfer 12 patients from moderate risk group into low risk group, and 246 patients from very high risk group into high risk group, and 47



patients from high risk into moderate risk group. We We observed a decrease in trait anxiety level to minimum in 92% of patients, almost all patients increased the level of objective self-assessment of wellbeing from “satisfactory” to “good”

As a result of the work done, we can see the possibility to lower the cardiovascular risk factors by 5% over the course of a relatively short stay at our medical SPA.

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В прошлом мы говорили о направлении кардиопрофилактики в санатории «Белые ночи». Эта проблема остается насущной по сегодняшний день.

По данным статистики по основным факторам риска внезапной смерти от сердечно-сосудистых заболеваний Россия и страны Европы имеют неутешительные показатели.

В санатории мы провели свою аналитику по группе пациентов в возрасте от 40 до 75 лет, не имеющих в анамнезе сердечнососудистых катастроф. Процент таких пациентов из общего количества пролеченных за год составляет 30%. Из этого количества пациентов мы сделали выборку.

Значимыми для нас факторами являлся возраст (лица не старше 70 лет), ИМТ более 25,0; повышенные цифры артериального давления, курение и пациенты на стадии формирования у них метаболического синдрома, когда поражены органы мишени. Следующим значимым для нас фактором являлась приверженность к лечению. У всех наших пациентов уровень дохода высокий, все они имеют высшее или среднее специальное образование, что оправдывает наши ожидания по поводу высокой приверженности к лечению.

По проведенным психологическим тестам у некоторых пациентов были завышены данные по стрессу и шкале тревоги. Низкий сердечно-сосудистый риск по шкале SCORE имели 18% пациентов, умеренный – 5%, высокий – 43%, очень высокий – 34%

Сегодня речь идет о лечении в термальных источниках, о бальнео и водолечении – и мы считаем, что это, наряду с занятиями спортом и соблюдением диеты одна из составляющих профилактики кардиозаболеваний. Тем более, что водо- и бальнеолечение это один из основных методов санаторно-курортного лечения.

Организм как единое целое отвечает на водную процедуру сложной реакцией, причем наиболее многообразно и ярко реагирует сердечнососудистая система. Правильно проведенная водолечебная процедура вызывает следующие реакции: усиливается обмен веществ, увеличивается скорость течения биохимических реакций в организме, улучшается микроциркуляция, происходит расширение сосудов, происходит влияние на кровяное давление и сердечную деятельность, улучшаются секреторная деятельность органов, функции опорнодвигательного аппарата, изменяется тонус гладкой и поперечнополосатой мускулатуры, мочеотделение, состав и вязкость крови, происходит перераспределение крови в организме и др.

Имея разработанные методики мы можем усилить метаболизм тканей, усилить лимфодренажное воздействие, снизить уровень стресса.

По классификации водолечебные и бальнео - процедуры делятся на холодные, горячие и процедуры индифферентных температур. Зная и понимая воздействие холодных и горячих ванн мы остановились на ваннах индифферентной температуры

Так как прохладная и холодная вода при воздействии на организм вначале вызывает сужение сосудов кожи, повышение артериального давления и усиление работы сердца; возбуждение нервной системы. При холодных ваннах возможен не желательный эффект в виде III фазы реакции, при которой сосуды остаются расширенными, стенки их теряют свой тонус, кровоток замедляется, образуется венозная застой.

При горячих ваннах вначале появляется кратковременный спазм сосудов, а потом их расширение, учащение пульса и затруднение работы сердца, так же как и при холодных ваннах повышается артериальное давление, повышается возбудимость нервной системы,

Пациент быстро утомляется.

Нетрудно видеть, что, изменяя температуру воды, вид и длительность процедуры, можно целенаправленно влиять на организм, тем самым вызывая желаемые ответные реакции.

При раздражение терморецепторов вступают в действие механизмы центральной нейро-эндокринной терморегуляции, Как холодные, так и горячие процедуры вначале приводят к состоянию повышенного возбуждения, а позже — к угнетению функции нервной системы. При процедурах с температурой воды, приближающейся к индифферентной, I фаза (сужение сосудов) выпадает. Реакция начинается с очень медленного, постепенного расширения сосудов и не приводит к значительным изменениям в состоянии кровообращения.

Создав матрицу проведения процедур пациентам по программе кардиопрофилактики с учетом портрета нашего пациента, мы назначаем назначать водо и бальнео процедуры в определенной последовательности и по определенной методике: это индифферентная температура ванн, лечебных душей и не продолжительные по времени процедуры,

количество сеансов № 6 - 7. При повышенном АД мы проводили йодобромная ванны с минерализацией: йод 1- мг/л бром 25 мг/л; при завышенном уровне тревоги, депрессии, и АД не более 130/80 мм.рт.ст. проводили ароматические ванны; при наличии ожирения и избыточной массы тела (ИМТ больше 25) проводили водолечебные процедуры с преобладанием механического воздействия ПСМ, душ Шарко, активные процедуры в воде; у пациентов с ИМТ = 25 и менее назначались циркулярный, веерный душ, гидромассажные ванны

В промежутках между водными процедурами пациентам проводились занятия ЛФК в зале, ходьба.

Непосредственно после водных процедур и после курса лечения мы измеряли следующие параметры: изменение сатурация кислорода, контроль пульса и артериального давления, субъективная оценка самочувствия.

В ходе лечения в течение 14 дней нам удалось снизить у пациентов на 5% риск смерти от сердечно сосудистых заболеваний за счет отказа от курения и снижения цифр артериального давления и перевести 12 пациентов из умеренного риска в низкий риск и

246 пациентов из очень высокого риска в высокий риск и 47 пациентов из высокого риска в умеренный риск. У 92 % пациентов снизился уровень личностной тревоги до минимального, практически у всех пациентов повысился уровень объективной самооценки состояния «удовлетворительно» до состояния «хорошо»

В ходе проведенной работы мы видим возможность снижения факторов сердечнососудистого риска на 5% за достаточно короткий срок пребывания человека в санатории.

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## **DEVELOPMENT OF ROMANIAN CLUSTERS AND RESULTS IN MEDICAL AND BALNEAL-TOURISM**

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### **AIM**

To present Romanian experience in the development of medical and balneo-medical clusters.

### **MATERIAL AND METHODS**

We used information from books and journals about clusters development and analysis and our own participating at national and international meetings organized by Amphitheater Foundation.

### **RESULTS**

In our days, clusters and cluster policies have begun to play an increasingly important role in the economic and political environment, being mentioned more and more often in relation to new development policies as an easy solution for the complex problems of the economy. Clusters are “critical mass of actors, resources, competences in order to sustain interaction between the cluster actors in the long term and to attract new members” with an existing “interaction and cooperation of firms which carry marked

features of both competition and cooperation” (Andersson et al.2004).

In 2009 the Romanian Ministry of Economics requested and funded the project “Guide to the implementation of the concept of innovative cluster in Romania. During recent years in Transylvania, following a well-established trend in the European Union - a series of cluster initiatives have started to appear, fueled either by bottom-up initiatives of companies, research institutions from related industries or third party organizations seeking financial gains from cluster management services or external funds, in accordance with the guidelines of the European Cluster Excellence Initiative (ECEI). Although the aim of the ECEI was to be able to award different labels to clusters across the European Union, and to analyze the managements of such structures and the behavior of clusters during a longer period, following the changes of direction and different approaches in time.

Transylvania Regional Balneotourism Cluster was established at the initiative of national organizations with a common purpose: to develop the Central Region Romania, by exploiting the existing natural resources with therapeutic effects. The initiators identified several objectives, like creating integrated and complex tourism services, to participate in or to initiate research projects and to introduce innovation in this sector of therapeutic tourism, modernization of buildings from the partner areas, creating a unitary and coherent cluster politics. The cluster also has like basic aim to represent the company’s interests, and to increase the competitiveness by building international relationships and promoting the Romanian balneotourism around the world.

## CONCLUSION

The clusters are even too small to be (inter)nationally competitive, and hence miss critical mass (cf. Andersson et al.2004).

## **INFLUENCE OF HUMUS SUBSTANCES ON ENDOTHELIAL CELLS UNDER CONDITIONS OF HYPERGLYCEMIA.**

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### **AIMS OF THE STUDY**

Diabetes has become an epidemic and being a risk factor of cardiovascular disease. Humus substances occurring in water, represent the organic material mainly widespread in nature and clinical studies have shown positive physiological effects. The biochemical and molecular mechanisms underlying these events are only partially known. High glucose concentration (30 mM/L) in the culture medium of endothelial cells, imitates conditions as uncontrolled diabetes. This model may contribute to better understanding the mechanism of diabetic vascular complication and can be useful in evaluation of impact of humus substances in treat of diabetes complications.

### **MATERIAL AND METHODS**

Endothelial cells (HUVEC line) were derived from human umbilical veins by the enzyme method using collagenase. Cells were cultured in M199 media supplemented with 20% fetal bovine serum, penicillin, endothelial cell growth supplement and heparin. The cells were incubated at 37° C in humidified atmosphere with 5% CO<sub>2</sub>. In study group (with 30 mM/L glucose) 1% humus water solution was added to the culture medium. The experiment was repeated three times with three independent cells isolations. The study was conducted in four group: 1- no glucose in culture medium, no humus substances (control group); 2- no glucose, humus substances added; 3- glucose in culture medium, no humus substances; 4-



glucose, humus substances in culture medium. The endothelial cells on the bottom were harvested by using trypsin and counted by Buerker hemocytometry in method using trypan blue.

## RESULTS

The number of HUVECs was highest in group 2 (humus substances) (Mean =  $4.44 \times 10^5$ ), and slightly lower in control group (Mean =  $4.21 \times 10^5$ ). The lowest number was observed in group 3 (Mean =  $3.39 \times 10^5$ ) cultured under hyperglycemic conditions. While the number of cells in group 4 with glucose and humus substances (Mean =  $4.24 \times 10^5$ ) reached the level similar to the control group.

## CONCLUSIONS

The lowest number of endothelial cells cultured under hyperglycemic condition indicates the negative impact of high glucose concentration on the proliferation. High glucose concentration induce apoptosis and excess cell death in cultured vascular endothelial cells. It appears that the adverse effects of hyperglycemia on vascular endothelial cells may be corrected by addition of humus substances. The impact of humus substances indicate enhance of cell proliferation.

## **AQUACERT QUALITY & SAFETY MANAGEMENT SYSTEM AND CERTIFICATION: A WAY TO MAINTAIN A LONG-TERM RELATIONSHIP OF TRUST WITH CLIENTS AND HEALTH AUTHORITIES**

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The development of Aquacert certification started in 2003 under the impulsion of the French ministry of health and the national syndicate of medical spa (Cneth). Because of the growing concern of regulators and consumers, in terms of Quality and Safety, a methodic and scientific approach was necessary to develop a recognizable and efficient independent certification for the French medical spa.

Therefor the “Aquacert certification initiative” was launched by reuniting a group of experts, scientists and professionals of the thermal waters, accompanied by representatives of consumers, the French ministry of Health and the French high Health authority. This standard of certification has been developed after 2 years of workshops by focusing on the processes, the control of products and derivatives based on thermal water, implemented as part of health care. Inherited from HACCP and comparable to ISO 22000 as well, this standard brings some methodology more applicable to the case of thermal medicine (medical spas). This standard is articulated with the French Good Practices Guide for thermalism and contains the requirements for a Quality and Safety Management System.

Since its official publication and signature by the French ministry of health, Aquacert standard has been integrated in the French regulation and give some benefits to the certified centers, regarding to the official control by sanitary authorities.

Entrusted to specialist-expert certified auditors, Aquacert certification has become the reference for quality and safety recognition in the French medical spa sector (Avène, La Roche-Posay, Vichy, Dax, Balaruc-Les-Bains, La Bourboule, Chaudes-Aigues, Vittel are some examples of a long list of thermal medicine centers that have chosen Aquacert certification to insure Quality and Safety to consumers and authorities).

This new type of standard for "Quality and Safety Management System", specific for the processes "Water & Health" with significant microbiological risk, opened new horizons for water standards.

Therefore, under the impetus of various interested parties, Aquacert became Aquacert International NGO in 2017. Aquacert International is now a real multiparty collaboration platform for the development and regulation of water and health certifications. Aquacert, multistakeholder approach is an efficient solution to design standard for the water & health sector by collaborating with official international institutions such as universities, International associations, official authorities, consumer's representatives etc...

The objective of such standards is to ensure fairness and transparency for water quality for users / consumers worldwide. In line with international and national standards bodies, accreditation bodies or recognition of the sector's professional skills, this NGO is currently initiating pilot development work in China, South-America and Europe.

Aquacert standards now concerns the drinking water producers, bottlers, thalassotherapy, spa professionals and spa hospital. True risk management approach this certification is a guarantee of security for customers, consumers and patients.

Specialized in the fields of water (hydrotherapy, drinking water, thermal medicine, bottling and laboratory microbiological analysis of water ... etc.) the authors of this abstract are at the conceptors of the Aquacert certification ([www.aquacert-certification.com](http://www.aquacert-certification.com)).

## **COMPLEX PROCESSING OF THERAPEUTIC MUD FROM THE DEPOSIT “SESTRORETSKOYE”.**

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Mud deposit “Sestroretskoye” is located in 40 km from St. Petersburg and contains unique therapeutic mud - gyttja clay.

The first stage of processing of this material is oxidation by air oxygen. It proceeds spontaneously as a result of the activity of microorganisms contained in the clay. Under optimum conditions the process is completed in 2 to 3 weeks. In the native state, the clay is not valuable for balneology, but after oxidation it evolves into precious ultra-acidic sulfate-ferrous mud which does not have known analogues.

Further processing can be performed in two ways. First way is used for the production of pasty mud and its derivatives and begins with sand removing. This is necessary to ensure good plasticity of the product. At the same stage, the material is carried to the required viscosity and converted into a creamy mass, suitable for both traditional and thin-layered appliques. There are two options for further modification of this ready-to-use product.

First is high-temperature treatment under increased pressure. This promotes fungicidal properties of gyttja clay and makes it effective in the complex therapy of fungal infections.

The second option implies extraction of mud solution and adding in this solution and in the remaining mud such active agents as menthol, camphor, turpentine. Obtained products allow to perform effective mud appliques and wrappings at lower temperatures, which results in the reduced list of contraindications for mud treatments.

Second way is intended to obtain dry material and so-called fangoparaffin. For that purpose, the oxidized gyttja clay is soft-dried at temperatures not higher than 50 ° C. The dry material is preliminarily grounded on a ball mill with "soft" grinding bodies, then separated from the sand and exposed to ultra-fine grinding up to 5 µm. As a result, a fine powder is formed, having a number of possible applications.

Baths enriched with this powder showed high effectiveness even at a concentration of 200 g per 200 liters. When diluted with hot water to the required consistency, a mass is formed for mud applications. Mixing with a special combination of paraffins, waxes and vegetable oils leads to the so-called fangoparaffin used for paraffin treatment. It also multifunctional active ingredient for SPA cosmetics. In combination with mineral water, micronized algae, sea salt, etc. this material provides a doctor with numerous treatment options.

To conclude, complex processing of gyttja clay allows to produce almost complete series of the balneological remedies and SPA cosmetics applied today.

## **SALSO-SULPHIDE THERMAL WATER IN THE PREVENTION OF RECURRENT RESPIRATORY INFECTIONS IN CHILDREN**

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Recurrent respiratory infections (RRI) represent a social problem for both the pharmaco-economic impact and the burden on the family. Thermal water is popularly well accepted. However, there is no scientific evidence of its preventive activity on recurrent respiratory tract infections (RRI). Therefore, the purpose of this study was to evaluate the effects of Agnano thermal water nasal irrigation on RRI prevention in children. A total of 107 children (70 males, mean age  $4.5 \pm 1.2$  years) with RRI were enrolled in the study. At baseline, children were randomly assigned to the treatment with: A) inhaled crenotherapy with salso-sulphide water or B) isotonic saline (NaCl 0.9%). Inhaled therapy was performed using nasal washing by Rinojet (ASEMA srl, Milan, Italy) b.i.d. for 12 days. Nasal washing lasted 2 minutes per nostril. Immediately before washing, children inhaled 1 l of water by stream inhalation per 2 minutes. Crenotherapy was capable of significantly reducing: the number of respiratory infections, nasal symptoms, neutrophil and bacteria count, turbinate and adenoidal hypertrophy, presence of biofilm, and blockage of ostiomeatal complex (OCM). In conclusion, this study provides the first evidence that Agnano crenotherapy may be capable of preventing RRI in children as it exerts some positive effects, such as reduction of nasal obstruction, OCM blockage, biofilm, and inflammatory events.

## **APPLICATION OF NATURAL HUMUS WATER IN DRINKING CURE IN PATIENTS WITH ALCOHOL DEPENDENCE – PRELIMINARY RESULTS**

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The unique therapeutic waters with humus acids content - humus waters (HW) – existing in Poland, are purely bacteriologically, tested in physical and chemical properties and are classified as drinking waters but have not yet been used for therapeutic purposes. Literature indicates that humus acids have anti-inflammatory, regenerative, immunological and other therapeutic effects. In our previous studies during the treatment of drinking cure of one of HW it was observed anti-inflammatory and regenerating effects damaged liver in animals. Our current research test the therapeutic action of drinking cure of HW in patients with alcohol addiction. We use the water from a spring in Brączewo, it is originally bacteriologically pure, physically and chemically stable, bicarbonate-chloride-sodium water containing 192,2 mg / dm<sup>3</sup> of humus acids.

## MATERIAL

The study included alcohol dependent patients (only men) treated at the Addiction treatment Unit of Psychiatry Clinic. In the main group - 21 patient- average age was  $41,1 \pm 8,3$  years, and average length of alcohol dependence in years was  $18,6 \pm 8,2$  (in the control group -21 patient -  $39 \pm 8,1$  and  $16 \pm 8,7$  years respectively). All patients had signs of a damage liver function expressed either in an increase in hepatic enzymes or in increase in liver. size in the data of ultrasound. The exclusion criteria were cirrhosis, viral and autoimmune hepatitis.

## METHODOLOGY

In addition to the standard drug treatment program, in a main group a drinking cure of humus water was included in a small balneological dose of 8 ml/kg body weight for 30 days, 3 times daily, 45 min before main meals.

In addition to medical examination, the following studies were conducted before and after treatment in both groups: laboratory tests: blood morphology, lipid profile, levels of glucose, total bilirubin, creatinine, eGFR, uric acid, albumin, CRP, ALT, AST, GGT, ALP, potassium and sodium and liver ultrasound where we assess the size of the liver and portal vein size;

## RESULTS

HW was well tolerated by patients; is indifferent to the taste; does not cause clinical side effects; does not cause adverse changes in blood morphology, CRP levels, biochemical indicators reflecting liver and kidneys function; does not cause electrolyte changes.

We estimated in main group compared with the control group statistically significant decrease levels of ALT, AST, total bilirubin and portal vein size. In both groups statistically significant decrease of the levels of GGTP, size of the liver. In Both groups significantly



increase the levels of albumin, total cholesterol and LDL-cholesterol. The weight in the main group increased significantly.

#### CONCLUSION

The main parameters of alcohol damage liver decreased statistically significantly under the influence of humus water drinking cure - this demonstrates the beneficial effect of this water on liver function and encourages further researches.

## **FORST - FOUNDATION FOR SCIENTIFIC THERMAL RESEARCH**

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There is hardly any doubt that crenotherapy is gaining new momentum today, and one crucial factor for this revival – which has and should have a more and more positive economic impact on national healthcare systems in Europe – derives from a rational and modern approach of basic and applied research on thermal therapy, which leverages on all advanced biomedical investigation techniques to provide a strong and widely acceptable scientific base for thermal medicine. The wealth of empirical knowledge about the benefits of hydrotherapy is definitely huge and digs its roots far back in time. On the other hand, it should be noted that in a recent past the empirical perception of thermal therapy did not encourage the development of its basic principles in a modern sense, and did not promote research in this sector. Moreover, due to its hybrid nature (health-related, as well as “leisurely”), until recently the thermal business could not develop the synergies and determination required to promote research in the sector. The resulting fragmented high-quality scientific production did not encourage the development of knowledge, nor did it help bring thermal medicine to the forefront among modern and scientifically proven medical practices.

A few years ago the hydrotherapy sector in Italy (represented by Federterme), as well as in other European countries including France and Spain, gradually gained consciousness of its potential as a driver of scientific research and set up – with a praiseworthy action at these times of scarce investment funds for research – the

*Foundation for Scientific Thermal Research (FoRST)*, which co-funds research projects in the sector ([www.fondazioneforst.it](http://www.fondazioneforst.it)). Official beneficiaries include first and foremost Universities and think-tanks; the instrument is based on public tenders and the evaluation criteria for projects, their progress, and their outcomes complies with the international standards, with peer reviews by anonymous, preferably foreign reviewers **(Figures 1-3)**.

In practical terms, this means that:

- 1) the technical-scientific committee for project management includes foreign scientists;
- 2) project entries are evaluated anonymously by a panel of Reviewers (peer-review) in charge of judging them based on quality and innovativeness, on the scientific standing of the proposing party, on the practical transferability of results, on the actual possibility to achieve results within the set term, on the appropriateness of the estimated costs;
- 3) part of the loan (balance) is linked with the actual achievement of the expected results in terms of scientific coverage in international peer-reviewed journals.

Effective from the year 2000 thermal Companies in Italy started to allocate 0.30% (0.40% in 2004 alone) of the gross National Healthcare Service turnover from prescription charges to a Fund created for the purpose at Federterme to implement scientific research initiatives in the thermal sector.

In January 2003, in order to ensure a more appropriate management of the raised funds, Federterme, with the approval of the Ministry of Health and of the Regional Authorities, set up the Foundation for scientific and thermal research, which was acknowledged as a legal entity in September 2003.

The Foundation is managed by a mixed public-private BoD and decides on calls for tenders and on co-funding of research projects (which may be granted for a maximum 60% share of the requested amount). The above-described joint commitment to research refers to the **law for the reorganization of the sector (Law No. 323 of October 24, 2000)**, which states, in art. 6, that: *“The Minister of Health can promote the involvement and collaboration of thermal companies to implement scientific research schemes, statistical-epidemiological surveys, and health education programmes, also aimed at general health goals, subject to the competence of the Ministry of Universities and Scientific and Technological Research pursuant to legislative decree No. 204 of June 5, 1998. For the purpose of implementing the programmes under subsection 1, the regions shall be supported by universities and specialized research entities and institutes in the performance of activities aimed at defining methodological models and ensuring technical and scientific supervision of the aforementioned programmes.”*

The FoRST funded six calls for tenders to date, focused – respectively – on the following main research themes:

- action mechanisms of the active ingredients of waters;
- rheumatology-rehabilitation;
- otolaryngology;
- bronchopneumology;
- dermatology;
- GI and urinary tract;
- cardiovascular diseases;
- microbiology and hygiene;
- technological innovation.

So far this process generated a significant increase in the number and quality of the scientific output in the thermal medicine sector.

The FoRST also launched a few special projects, including the following:

1. Hydroglobe project, in cooperation with FEMTEC and with the World Health Organization (WHO), aimed at redefining the world geography with respect to the use and applications of Thermal Medicine, which the WHO included among the development goals for 2014-2013 ([http://www.sanita24.ilssole24ore.com/art/imprese/2014-03-07/HYDROGLOBE-112434.php?uuid=AbJ0SUSJ&refresh\\_ce=1](http://www.sanita24.ilssole24ore.com/art/imprese/2014-03-07/HYDROGLOBE-112434.php?uuid=AbJ0SUSJ&refresh_ce=1));
2. Consensus initiative on the appropriateness and efficacy of thermal therapy in musculoskeletal disorders (Paoloni et al, *Ann Ist Sup San*, 2017)

Additionally, hydrotherapy deserves to be defined not just in terms of therapeutic efficacy, but also of prevention, i.e. of health maintenance (with subsequent healthcare-related savings). The *thermae*, non-hospital healthcare facilities, are most effective at prevention, which is the only rational generator of healthcare-related savings. While a prevention effort can hardly come from the National Healthcare Service (which spends all the available funds for care), enhancing integration with the private thermal sector, which already exists in an organized form, capable to provide it under medical control, is definitely a worth-while option.

The assessment of the quality of life indexes defined by the WHO is a starting point that can be measured and applied both to preventive medicine and to therapeutic medicine. An old static concept of health, meant as the mere absence of illness, ideally corresponded – in the thermal sector – to an equally outdated concept of thermal establishment, solely linked to therapeutic hydrotherapy. The modern dynamic concept of preventive medicine

meant as the maintenance of health (a lifestyle that actively reduces risk factors) now corresponds to an equally dynamic concept of *thermal course*, alongside wellness practices that may also involve therapeutic hydrotherapy, but mostly for prevention purposes. In this respect, the modern *thermae* are intended as an organized and readily available component of the welfare community, with a potential positive impact both on therapy and on prevention, including appropriate nutrition and motor activities.

In consideration of the continuous increase of health spending in western countries, a true wellness-care combination, i.e. preventive medicine-therapeutic medicine, supported by robust scientific data, implemented by duly trained staff and enjoying full openness of the legislator, is a major driver for the recovery of the thermal sector.

## **IGM® LIFESTYLE PROGRAM SINOCUR - AN EVIDENCE BASED CONCEPT OF INDIVIDUAL HEALTH MANAGEMENT AND HEALTH EDUCATION**

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The problem of health systems in so called civilized countries is the dramatic increase of chronic diseases, for example heart attack, stroke, diabetes type 2 and cancer. Those diseases are mainly due to life style faults as there are malnutrition, lack of movement, emotional stress, addiction etc. Those problems can only be overcome by an health promoting and preventive life style of the affected patients. For that, those patients need health education.

The IGM Life Style Program SINOCUR is an evidence based educational program which empowers healthy and sick people to a health promoting and preventive life style.