



Raportul Asociației Române de Balneologie - 2022

Dragi colegi,

Anul **2022** a fost unul plin de provocări dar și de oportunități pentru noi toți ca și pentru **Asociația Română de Balneologie**. Obiectivele stabilite la începutul anului au fost îndeplinite: Congres 2022 -(EACCME®) cu 44 credite, articole științifice, proiect experimental PED, proiect european, acceptat la finanțare pentru următoarele 48 de luni, participări la evenimente din țară și din străinătate. E întotdeauna loc de mai bine, dar acest mai bine vine prin munca dublată de pasiune.

Asociația Română de Balneologie se definește, conform statutului, drept **organizație profesională de promovare a turismului balnear** din țara noastră, un factor de progres necesar pentru dezvoltarea cercetării științifice a factorilor naturali terapeutici, un mediu academic în care să ne putem exprima profesional și un amfiteatru pentru a disemina rezultatele obținute în activitatea noastră științifică. În acest sens am participat la numeroase întâlniri organizate de Ministerul Antreprenoriatului și Turismului.

Din perspectiva științifică, **Balneo and PRM Research Journal** a publicat în 2022, **32 articole**, redactate în limba engleză, revistă indexată momentan în mai multe baze internaționale de date, cum ar fi DOAJ, CrossRef, NML sau ESCI. Am fost reconfirmați în ESCI—ISI Thompson. **Anul 2023 va fi primul în care sperăm să primim și factor de impact—IF.**

Obiectivele anului 2023: Congres AMR 2023, Congres 2023 —Timișoara, minim 10 articole ISI publicate în 2023, Balneo and PRM Research Journal cu IF, un nou proiect de cercetare acceptat la finanțare, derularea activităților experimentale prevăzute pentru proiectele aflate în execuție, noi contracte de cercetare. Pentru toate acestea, dorim sănătate și armonie între noi.



Dr. Biol. Constantin MUNTEANU, PhD,
Președinte al Asociației Române de Balneologie



Membrii ARB - persoane juridice

SC Biosafety SRL - București

Reprezentant: Munteanu Constantin

SC Ana Hotels SA - Eforie Nord

Reprezentanți: Iuliana Tasie, Director General,
Dr. Mihaela Cucu, Director Medical

Membrii ARB - persoane fizice

În anul 2022 Asociația Română de Balneologie numără 278 membri—persoane fizice, dintre care **85 Medici** pentru care se va achita taxa de membru al Asociației Medicale Române (AMR).

Statutul de membru al Asociației Române de Balneologie se reînnoiește anual. Pentru **anul 2023** statutul de membru este acordat celor care vor completa formularul de înscriere online de pe pagina asociației <http://bioclima.ro> și vor achita taxa de membru în valoare de **100 lei**. Medicii rezidenți, fizio-kinetoterapeuții, asistenții medicali, cercetătorii științifici, funcționarii publici din autorități publice locale / centrale și membrii ai altor ONG-uri de promovare a turismului au o reducere de 50 % a taxei - pentru aceste categorii, valoarea taxei fiind de **50 lei**. Plata taxei de membru al Asociației Române de Balneologie include 25 lei pentru Abonamentul la revista asociației Balneo Research Journal, introdusă în Nomenclatorul Publicațiilor medicale ale Colegiului Medicilor din România.



Titlul Proiectului: Metoda combinata bazata pe imagistica hyperspectrala și investigații biologice de evaluare a efectelor unor factori naturali terapeutici în afecțiuni din sfera patologiei Neuro-Mio-Artro-Kinetice



Proiectul BIOHIS își propune să dezvolte, să testeze și să valideze o nouă metodă de bioinginerie, utilizând date corelate de imagistică hyperspectrală (HSI) și investigații biologice pentru evaluarea eficacității terapeutice a factorilor terapeutici naturali, cum ar fi namolul sau apele minerale sulfuroase naturale, în sfera de patologie Neuro-Mio-Artro-Kinetică.



Raport științific și tehnic

Etapă de cercetare nr. 1 / 2022

Contract nr. 649PED/2022

Etapă nr. 1/2022 Dezvoltarea metodei BIOHIS

Cod proiect: PN-III-P2-2.1-PED-2021-2146

Titlul proiectului: Metoda combinată bazată pe imagistică hyperspectrală și investigații biologice de evaluare a efectelor unor factori naturali terapeutici în afecțiuni din sfera patologiei Neuro-Mio-Artro-Kinetice (BIOHIS)

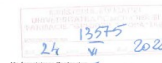
Descrierea științifică a punerii în valoare a rezultatelor etapei anuale și gradul de realizare a obiectivelor:

Etapă 1 din cadrul proiectului BIOHIS are ca obiectiv principal dezvoltarea unei noi metode de bioinginerie - metoda BIOHIS - dedicată evaluării eficacității terapiei a factorilor terapeutici naturali care sunt utilizate sau pe care se bazează metodele naturale sau factorii naturali terapeutici (Namolul sau Apele minerale sulfuroase naturale) în afecțiuni din sfera patologiei Neuro-Mio-Artro-Kinetice (NMAK). Metoda BIOHIS se bazează pe combinarea informațiilor furnizate de tehnica de imagistică hyperspectrală (HSI) cu date obținute din investigații biologice care să conducă la evidențierea cantitativă a efectelor factorilor terapeutici naturali și utilizarea lor ca metode naturale pentru patologia NMAK.

Imagistica hyperspectrală (HSI) este o tehnică emergentă în domeniul medical care integrează facilitățile oferite de imagistica digitală și spectroscopie pentru a colecta simultan atât informații spațiale cât și spectrale despre un subiect asupra căruia se dorește o analiză structural/compozițională chimică a țesuturilor investigate și poate fi utilizată medical în procesul de diagnosticare sau monitorizare a tratamentelor medicale. Posibilitatea utilizării combinate a unor surse de informații spectrale-spațiale furnizate de tehnica HSI cu date obținute din investigații biologice este esențială în cadrul dezvoltării metodei BIOHIS propuse în acest proiect.

Factorii terapeutici naturali, precum namolul și apele termostate minerale sulfuroase, sunt utilizate în sănătate și clinică de timpuriu prin bote și aplicații locale pe corp pentru multe afecțiuni în patologia Neuro-Mio-Artro-Kinetice (NMAK). Evidența medicală raportată de factorii naturali asupra îmbunătățirii stărilor și patologice ar putea fi explorată prin electrocardiografie (ECG), radiometrie și investigații biologice, folosind echipamente pentru analiza și biochimie, sau prin metode moderne, diferite, folosind diverse surse, din sfera științei de evaluare medicală, ca și pentru metode (Vizi-Vizual, Analiză, Scări, pentru separarea de mijloc (Range of Motion), sau îmbunătățirea eficienței activităților de zi cu zi.

Spectrul de afecțiuni patologice legate de aparatul NMAK include artroză, artrită, spondilită, leziuni traumatiche, accident vascular cerebral, boli neurodegenerative, disfuncție a tendonului muscular și mișcările articulare - spondilită, patologia sistemului nervos periferic, radiolipidul dislipidic și/sau vertebrolog, poliradiculoneuropatie, amputații ale membrului, surditate post-COVID-19 sau surditate de sistemul nervos central, ocluzii hipertensive, migrene, patologii musculo-scheletale traumatice, incluziv boli degenerative, fracturi, pentru ocaziunile în



Nr. înregistrare Contract nr.

Nr. înregistrare UEFSC nr. 110/30.06.2022

CONTRACT DE FINANȚARE PENTRU EXECUȚIE PROIECTE

NR. 649PED / 2022

Finanțare:

Denumirea Programului din PN III:

Denumirea Subprogramului:

Tip proiect:

Titlul proiectului:

Valoarea totală a Contractului:

De care, pe surse:

Sursa 1 - de la bugetul de stat:

Sursa 2 - din alte surse atrase:

(cofinanțare):

Durata contractului:

Nr. de pagini ale contractului:

Antoritatea Contractantă:

Contractor:

Semnături:

De acord pentru

Contractor

Data: 24.06.2022

UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE

"GRIGORE T. POPA" DIN IASI

Rector

Prof. univ. dr. Viorel Ștefan

Director de proiect

Șef birou / CS al dr. CORNELIU PRINTEANU

Director Economic

Ec. Petreanu Burzescu

Consilier juridic

Av. Raluca Laura

bugetul de stat

Proiectul 2 - Creșterea competitivității economiei

condiționat prin cercetare, dezvoltare și inovare

Subprogramul 2.1 - Competitivitate prin cercetare,

dezvoltare și inovare

Proiect experimental - dezvoltare

Metoda combinată bazată pe imagistică hyperspectrală

și investigații biologice de evaluare a efectelor unor

factori naturali terapeutici în afecțiuni din sfera

patologice Neuro-Mio-Artro-Kinetice

588.795,00 lei

588.795,00 lei

6,00 lei

24 luni

pagini

Utilizata înscrisurii pentru Finanțarea Încălzirii

Superior, a Cercetării, Dezvoltării și Inovării

UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE

GRIGORE T. POPA DIN IASI

De acord pentru

Antoritatea Contractantă

La București

Data


Utilizata înscrisurii pentru Finanțarea

Încălzirii Superioare, a Cercetării, Dezvoltării și Inovării

PF, Director Economic,

Lucia BUCUREȘTI

Proiectul European 101080875 - STRATIF-AI, finanțare aprobată, durata 48 luni



EUROPEAN HEALTH AND DIGITAL EXECUTIVE AGENCY
(HADEA)

HADEA – Health and Food
A.3 – Health research

Gunnar CEDERSUND
LINKÖPINGS UNIVERSITET
CAMPUS VALLA
581 83 LINKÖPING
SWEDEN

Subject: Horizon Europe (HORIZON)
Call: HORIZON-HLTH-2022-TOOL-12-two-stage
Project: 101080875 — STRATIF-AI
GAP invitation letter

Dear Applicant,

I am writing in connection with your proposal for the above-mentioned call.

Having completed the evaluation, we are pleased to inform you that your proposal has passed this phase and that we would now like to start grant preparation.

Please find enclosed the evaluation summary report (ESR) for your proposal (for both stages of the evaluation).

Please be aware that there may be differences between the ESRs, since stage 1 evaluations are done on the outline of your proposal, while stage 2 evaluations cover the full proposal.

Invitation to grant preparation

Grant preparation will be based on the following:

1. **Project:**
- Project number and name:** 101080875 — STRATIF-AI


Topic: HORIZON-HLTH-2022-TOOL-12-01-two-stage — Computational models for new patient stratification strategies

Type of action: HORIZON Research and Innovation Actions

Requested grant amount (proposal): 5 969 100.00 EUR

Maximum grant amount (after evaluation): 5 969 100.00 EUR

Project duration: 48 months



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HOW AS AN EXPERT

SUPPORT

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STRATIF-AI

Details

Comments

Project ID

101080875

Programme

HORIZON

EU Agency

HADEA

Have help?

COORDINATOR

Organisation

LINKÖPINGS UNIVERSITET - LU

EDIT ROLES

BENEFICIARY

Organisation

TECHNOLOGICAL UNIVERSITY DUBLIN - TU Dublin

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Organisation

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Schweizer Paraplegiker-Forschung AG - SPP

EDIT ROLES

BENEFICIARY

Organisation

SPITALUL CLINIC DE URGENTA BUCURESTI-ARSEN - EMERGENCY CLINICAL HOSPITAL BUCURESTI-ARSEN

EDIT ROLES

Address

RO000004-REDUCED/10-12-01/15 BUCURESTI-RO

PIE 10200002

Participant list

Participant Contact

Team Member

Team Member

Participant Contact

Project Financial Signatory

Project Legal Signatory

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stefan.burton@tu-dublin.ie

director.financ@paraplegiker.ch

manager@spitalul-arsen.ro

Within STRATIF-AI, we will apply this methodology to stroke care. Stroke is a high prevalence disease with a huge societal burden where continuous stratification would greatly enhance disease management, making it an ideal use case for the application of modern computational techniques. During the dynamic trajectory of the disease, from acute stroke to rehabilitation and long-term disease management phases, stratification would enable personalised care as patients evolve. Despite considerable progress in understanding stroke risk factors and treatments, it is still extremely difficult to implement traditional knowledge-based decisions on what prevention measures and/or therapeutics to use for which patients. The availability of more effective preventive and therapeutic interventions tailored to the individual or groups of individuals with common phenotypes is still lacking. The most important identified causes are i) the **lack of interdisciplinary research that takes advantage of data integration solutions and technologies** (e.g. advanced statistical and/or AI/machine learning methods and/or digital twin technologies) ii) the **absence of data integrative computational models from multiples stroke-relevant sources (structured and unstructured data)** to be stored, exchanged and re-used taking advantage of a series of already available interoperability standards, and iii) the **lack of optimised, robust, transparent, trustworthy and accurate computational models to guide stratification strategies** aimed at stroke prevention and for improving patients' clinical outcomes as measured by standardized assessments

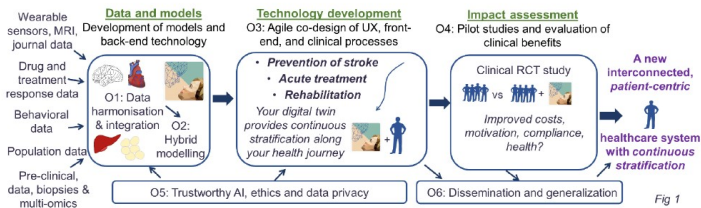
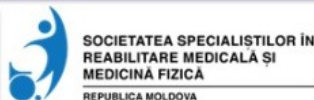


Fig 1

Activități relevante ale Asociației Române de Balneologie în anul 2022

Societatea Română de Medicină Fizică, de Recuperare și Balneoclimatologie (SRMFRB)



Congresul Național de Medicină Fizică, de Recuperare și Balneologie cu participare internațională

Slănic Moldova, 3 – 7 Septembrie 2022 /
Techirghiol, 7 – 10 Septembrie 2022



<http://srmfrb.ro>



<http://bioclima.ro>



Asociația Română de Balneologie (ARB)

1 ST ROMANIAN-ITALIAN CONFERENCE ON PHYSICAL AND REHABILITATION MEDICINE

AUXOLOGICO PRESIDENT MEDCENTER

BAILE FELIX, ORADEA – ROMANIA

October 2022, Friday 21 and Saturday morning 22

MEETING PRESIDENTS: PROF. GELU ONOSE AND PROF. LUIGI TESIO

BALNEO and PRM Research Journal

Vol 19, No. 1, March 2022



ROMANIAN ASSOCIATION
DE MEDICINA
FIZICA
DE RECUPERARE
SI BALNEOClimatologie



Website <http://bioclima.ro/journal.htm>

E-mail: office@bioclima.ro

Balneo and PRM Research Journal is part of the international data bases (BDI) as follow:
EBSCOhost: CrossRef DOAJ Electronic Journals Library (GGA) USA National Library of Medicine - NLM
Emerging Sources Citation Index — ESCI (Thomson Reuters)

Publisher: Romanian Association of Balneology (Bucharest)

Asociatia Romana de Balneologie / Romanian Association of Balneology

Editura Balneara

Balneo and PRM Research Journal / Index name: BALNEO

Indexare BDI science.thomsonreuters.com

Editor: Romanian Association of Balneology / Asociația Română de Balneologie

Dupa 12 ani, dupa 532 articole publicate, dupa eforturi susținute și prin prisma lecțiilor învățate, Balneo and PRM Research Journal își menține locul între revistele românești indexate ESCI—ISI.

În 2022 au fost publicate 32 de articole, evaluate de un grup de 20 de peer-review-eri, fiind emis un certificat în acest sens:



Indexare în **EMERGING SOURCES CITATION INDEX (ESCI)**

Vă mulțumim pentru efortul comun de până acum și vă invităm să continuăm acest demers pentru ca împreună să fim promotorii dezvoltării balneologiei și să oferim instrumente adecvate de promovare academică a fiecăruia dintre noi.

BALNEO
RESEARCH

Balneo and PRM Research Journal

English Edition

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ROMANIAN ASSOCIATION OF BALNEOLOGY

Reference: BPRMRJ/ART/49713(1)/2022

Date: 21 March 2022



Certificate of publication

(497) Rehabilitation of post-COVID patients with chronic fatigue and cognitive disorders syndromes

- Liudmila Babliuk, Svitlana Fediaeva, Iryna Babova, Vita Mesoedova, Sergii Tamazlykar

Balneo and PRM Research Journal. 2022;13(1):497 Full Text DOI 10.12680/balneo.2022.497

Autorized signature:
Constantin Munteanu



Editor-in-chief of Balneo and PRM Research Journal
Romanian Association of Balneology

- Website <http://bioclima.ro/Journal.htm>
- Editorial Board: <http://bioclima.ro/Edit.php>

Balneo and PRM Research Journal

Print ISSN: 2734-844X
Online ISSN: 2734-8458



INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY

46th **ISMH**

WORLD CONGRESS
SCIENCE **P**ER **A**QUAM

JUNE 22-24, 2022
SALSO MAGGIORE TERME (PR) - ITALY







Activitate în cadrul Consiliului Consultativ al Turismului 2022

UAT SLĂNIC MOLDOVA
STR. VASILE ALECSANDRI NR. 4
JUD. BACĂU; CIF 478442;
e-mail: primaria@primariaslanicmoldova.ro;
web: www.primariaslanicmoldova.ro
tel: 0234348119; fax: 0234348139; RO 46580
EN ISO 9001:2015
EN ISO 14001:2015



Nr. 7357/07.06.2022

CONTRACT PRESTĂRI SERVICII

1. În temeiul Legii nr. 98/19.05.2016 privind achizițiile publice, cu modificările și completările ulterioare, s-a încheiat prezentul contract de prestări servicii, între:

U.A.T. SLĂNIC MOLDOVA, cu sediul în or. Slănic Moldova, str. Vasile Alecsandri, nr. 4, județul Bacău, cod înregistrare fiscală 4278442, e-mail primaria@primariaslanicmoldova.ro, tel./fax: 0234.348119/0234348829, cont deschis la Trezoreria Mun. Onesti, reprezentată prin Primar - ec. BACIU GHEORGHE, în calitate de **ACHIZITOR**, pe de o parte,

și

S.C. BIOSAFETY S.R.L., cu sediul în mun. București, Str. Postavarul, nr. 3C, Sector 3, e-mail: constantin278@yahoo.com, office@ebiosafety.ro, tel: 0723138339, înregistrată în Registrul Comerțului sub nr. J40/3068/2011, CUI 28184450, cont deschis la

Părțile au înțeles să încheie azi,, prezentul contract în 2 (două) exemplare, câte unul pentru fiecare parte.

Achizitor,
UAT ORASUL SLANIC MOLDOVA
reprezentată prin
Primar,
ec. Baciu Gheorghe

Prestator,
S.C. BIOSAFETY S.R.L. București

Administrator
MUNTEANU CONSTANTIN

Viza Birou Economic,
ec. Boaca Saulescu Gen

Viza Compartiment Juridic,
cons. jur. Forcoș Petre

Intocmit - Achiziții Publice,
cons. sup. Scurtu Mihaela Alina

Viza Birou Urbanism
Dr. Ing. Stamate Marius

Viza CFP,
cons. asist. Moraru Mihaela Rozalia



MINISTERUL SANATATII
SANATORIUL BALNEAR SI DE RECUPERARE TECHIRGHIOI
Str. Dr. Victor Climescu, nr. 34-40
Tel: 0241481711
Fax: 0241735705
web: www.sghighiol.ro

Contract de prestari servicii

Nr. 7469 / 28.04.2017

În temeiul Legii nr.98/2016, privind atribuirea contractelor de achiziție publică, s-a încheiat prezentul contract de prestari servicii,

Între

SANATORIUL BALNEAR SI DE RECUPERARE TECHIRGHIOI cu sediul în Techirghiol, str. Dr. Victor Climescu nr. 34 – 40, cod postal 906100, județ Constanța, telefon/fax 02141/481.721 și 0241/735.705, cod fiscal nr. 4300868, cont RO51TREZ23F660606200109X deschis la Trezoreria Eforie, reprezentat legal prin **Manager - Almasan Elena-Roxana**, în calitate de achizitor, pe de o parte,

și

S.C BIOSAFETY S.R.L., cu sediul în Bucuresti, Sector 3, str. Postavarul nr. 3C, et.1, ap. 11, cod fiscal nr. 28184450, cont RO18INGB0000999904664056 deschis la ING Bank, reprezentata prin **Presedinte –Munteanu Constantin**, în calitate de prestator, pe de altă parte.

Părțile au înțeles să încheie azi, 28.04.2017, prezentul contract ale cărui clauze au fost discutate, negociate, înțelese și acceptate de părți în 2 (doua) exemplare, din care un exemplar la prestator și un exemplar la achizitor.

Prezentul contract conține un număr de 6 (sase) pagini.

Achizitor, SANATORIUL BALNEAR SI DE RECUPERARE TECHIRGHIOI	Prestator, S.C. BIOSAFETY S.R.L.
MANAGER ALMASAN Elena-Roxana	PRESEDINTE MUNTEANU Constantin
DIRECTOR FINANCIAR CONTABIL STAN Mariana	
DIRECTOR MEDICAL IONESCU Elena Valentin	
VIZA C.F.P. LUNGU Florinela	
COMPARTIMENT JURIDIC, CORBEANU Monica	



MINISTERUL SANATATII
SANATORIUL BALNEAR SI DE RECUPERARE TECHIRGHIOI

Str. Dr. Victor Climescu, nr. 34-40, Tel: 0241 481 711, Fax: 0241 735 705, Web: www.sghighiol.ro, E-mail: sgighiol@sgighiol.ro



Nr. 10035 / 07.07.2022

CONTRACT DE PRESTARE SERVICII

În temeiul Legii nr. 98/2016 privind achizițiile publice și a Hotărârii Guvernului nr. 395/2016 pentru aprobarea Normelor metodologice de aplicare a prevederilor referitoare la atribuirea contractului de achiziție publică/cadru-cadru din Legea nr. 98/2016 privind achizițiile publice, s-a încheiat prezentul contract de prestare servicii,

Între:

SANATORIUL BALNEAR SI DE RECUPERARE TECHIRGHIOI cu sediul în oras Techirghiol, B-dul. Dr. Victor Climescu nr.34-40, cod postal 906100, județ Constanța, telefon. 0241-481.711, fax 0241-735.705, Cod fiscal 4300868, cont IBAN RO48TREZ23F66060621000X deschis la Trezoreria Eforie, reprezentat legal prin **manager - Elena-Roxana ȚUCMEANU**, în calitate de **BENEFICIAR**, pe de o parte,

și

S.C BIOSAFETY S.R.L., cu sediul în București, Sector 3, str. Postavarul nr. 3C, et.1, ap. 11, cod postal 032421, tel. 0723.138.339, e-mail: office@ebiosafety.ro, cod fiscal nr. 28184450, nr. de înregistrare în Reg. Comerțului – J40/3068/2011, cont RO18INGB0000999904664056 deschis la ING Bank, reprezentata prin **Presedinte – MUNTEANU Constantin**, în calitate de **PRESTATOR**, pe de altă parte.

Părțile au înțeles să încheie prezentul contract, în 2 (doua) exemplare, câte un exemplar pentru fiecare parte contractantă, având fiecare un număr de 8 (opt) pagini.

Beneficiar, SANATORIUL BALNEAR SI DE RECUPERARE TECHIRGHIOI	Prestator, S.C. BIOSAFETY S.R.L.
MANAGER Elena – Roxana ȚUCMEANU	PRESEDINTE MUNTEANU Constantin
SDIRECTOR FINANCIAR-CONTABIL Mariana STAN	
VIZA C.F.P.P Florinelă LUNGU	
COMPARTIMENT JURIDIC Ioana CASANDRA	

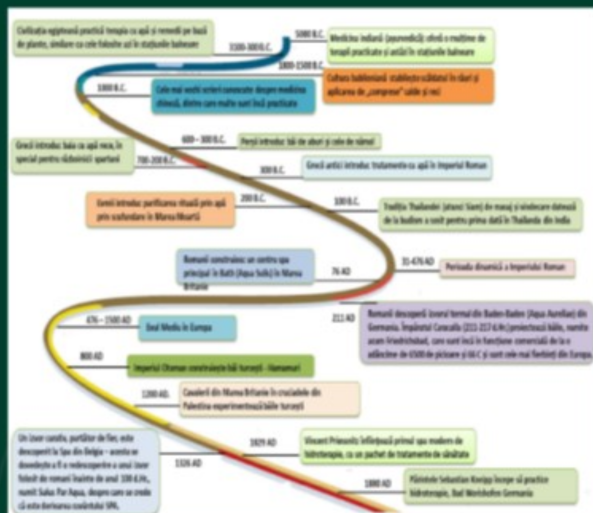


UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE
GRIGORE T. POPA IAȘI

Constantin Munteanu, Mariana Rotariu, Mihaela-Iustina Condurache

Facultatea de Bioinginerie
Medicală

Hidrotermoterapie



Editura Universității „Grigore T. Popa” Iași,
2022



UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE
GRIGORE T. POPA IAȘI

Constantin Munteanu, Mariana Rotariu, Mihaela-Iustina Condurache

Facultatea de Bioinginerie
Medicală

Hydrothermotherapy



Editura Universității „Grigore T. Popa” Iași,
2022

Constantin MUNTEANU
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Review

Non-invasive, non-pharmacological/bio-technological interventions towards neurorestoration upshot after ischemic stroke, in adults—systematic, synthetic, literature review

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- Ethics approval and consent to participate
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1. Abstract

Considering its marked life-threatening and (not seldom: severe and/or permanent) disabling, potential, plus the overall medico-psycho-socio-economic tough burden it represents for the affected persons, their families and the community, the cerebrovascular accident (CVA)—including with the, by far more frequent, ischemic type—is subject to considerable scientific research efforts that aim (if possible) at eliminating the stroke induced lesions, and consist, as well, in ambitious—but still poorly transferable into medical practice—goals such as brain neuroregeneration and/or repair, within related corollary/upshot of neurorestoration. We have conducted, in this respect, a systematic and synthetic literature review, following the “Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)” concept. Accordingly, we

have interrogated five internationally renowned medical data bases: Elsevier, NCBI/PubMed, NCBI/PMC, PE-Dro, and ISI Web of Knowledge/Science (the last one to check whether the initially identified articles are published in ISI indexed journals), based on a large (details in the body text) number of most appropriate, to our knowledge, key word combinations/syntaxes—used contextually—and subsequently fulfilling the related, on five steps, filtering/selection methodology. We have thereby selected 114 fully eligible (of which contributive: 83—see further) papers; at the same time, additionally, we have enhanced our documentation—basically, but not exclusively, for the introductory part of this work (see further)—with bibliographic resources, overall connected to our subject, identified in the literature within a non-standardized search. It appears that the opportunity window for morph-functional recovery after stroke is larger than previously thought, ac-

Review

Recent Advances in Molecular Research on Hydrogen Sulfide (H₂S) Role in Diabetes Mellitus (DM)—A Systematic Review

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Abstract: Abundant experimental data suggest that hydrogen sulfide (H₂S) is related to the pathophysiology of Diabetes Mellitus (DM). Multiple molecular mechanisms, including receptors, membrane ion channels, signaling molecules, enzymes, and transcription factors, are known to be responsible for the H₂S biological actions; however, H₂S is not fully documented as a gaseous signaling molecule interfering with DM and vascular-linked pathology. In recent decades, multiple approaches regarding therapeutic exploitation of H₂S have been identified, either based on H₂S exogenous apport or on its modulated endogenous biosynthesis. This paper aims to synthesize and systematize, as comprehensively as possible, the recent literature-related data regarding the therapeutic/rehabilitative role of H₂S in DM. This review was conducted following the “Preferred reporting items for systematic reviews and meta-analyses” (PRISMA) methodology, interrogating five international medically renowned databases by specific keyword combinations/syntaxes used contextually, over the last five years (2017–2021). The respective search/filtered and selection methodology we applied has identified, in the first step, 212 articles. After deploying the next specific quest steps, 51 unique published papers qualifying for minute analysis resulted. To these bibliographic resources obtained through the PRISMA methodology, in order to have the best available information coverage, we added 86 papers that were freely found by a direct internet search. Finally, we selected for a connected meta-analysis eight relevant reports that included 1237 human subjects elicited from clinical trial registration platforms. Numerous H₂S releasing/stimulating compounds have been produced, some being used in experimental models. However, very few of them were further advanced in clinical studies, indicating that the development of H₂S as a therapeutic agent is still at the beginning.

Keywords: hydrogen sulfide (H₂S); Diabetes Mellitus (DM); DM vascular-linked pathology; systematic review; oxidative phosphorylation; ROS (Reactive Oxygen Species)

1. Introduction

Diabetes Mellitus (DM) is a non-communicable chronic metabolic disease [1] characterized by prolonged hyperglycemia. Type 1 DM is a chronic condition in which the body's pancreatic β cells, determined by different causes, reduce insulin production. Instead, type



Review Cellular and Molecular Targets for Non-Invasive, Non-Pharmacological Therapeutic/Rehabilitative Interventions in Acute Ischemic Stroke

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Abstract: BACKGROUND: Cerebral circulation delivers the blood flow to the brain through a dedicated network of sanguine vessels. A healthy human brain can regulate cerebral blood flow (CBF) according to any physiological or pathological challenges. The brain is protected by its self-regulatory mechanisms, which are dependent on neuronal and support cellular populations, including endothelial ones, as well as metabolic, and even myogenic factors. OBJECTIVES: Accumulating data suggest that "non-pharmacological" approaches might provide new opportunities for stroke therapy, such as electro-/acupuncture, hyperbaric oxygen therapy, hypothermia/cooling, photobiomodulation, therapeutic gases, transcranial direct current stimulations, or transcranial magnetic stimulations. We reviewed the recent data on the mechanisms and clinical implications of these non-pharmacological treatments. METHODS: To present the state-of-the-art for currently available non-invasive, non-pharmacological-related interventions in acute ischemic stroke, we accomplished this synthetic and systematic literature review based on the Preferred Reporting Items for Systematic Principles Reviews and Meta-Analyses (PRISMA). RESULTS: The initial number of obtained articles was 313. After fulfilling the five steps in the filtering/selection methodology, 54 fully eligible papers were selected for synthetic review. We enhanced our documentation with other bibliographic resources connected to our subject, identified in the literature within a non-standardized search, to fill the knowledge gaps. Fifteen clinical trials were also identified. DISCUSSION: Non-invasive, non-pharmacological therapeutic/rehabilitative interventions for acute ischemic stroke are mainly holistic therapies. Therefore, most of them are not yet routinely used in clinical practice, despite some possible beneficial effects, which have yet to be supplementarily proven in more related studies. Moreover, few of the identified clinical trials are already completed and most do not have final results. CONCLUSIONS: This review synthesizes the current findings on acute ischemic stroke therapeutic/rehabilitative interventions, described as non-invasive and non-pharmacological.

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Mobile Mechatronic/Robotic Orthotic Devices to Assist-Rehabilitate Neuromotor Impairments in the Upper Limb: A Systematic and Synthetic Review

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This paper overviews the state-of-the-art in upper limb robot-supported approaches, focusing on advancements in the related mechatronic devices for the patients' rehabilitation and/or assistance. Dedicated to the technical, comprehensively methodological and global effectiveness and improvement in this inter-disciplinary field of research, it includes information beyond the therapy administrated in clinical settings-but with no diminished safety requirements. Our systematic review, based on PRISMA guidelines, searched articles published between January 2001 and November 2017 from the following databases: Cochrane, Medline/PubMed, PMC, Elsevier, PEDro, and ISI Web of Knowledge/Science. Then we have applied a new innovative PEDro-inspired technique to classify the relevant articles. The article focuses on the main indications, current technologies, categories of intervention and outcome assessment modalities. It includes also, in tabular form, the main characteristics of the most relevant mobile (wearable and/or portable) mechatronic/robotic orthoses/exoskeletons prototype devices used to assist-rehabilitate neuromotor impairments in the upper limb.

Keywords: upper limb rehabilitation, robotic exoskeletons, mobile robotic orthotic devices, mechatronic wearable orthoses, systematic and synthetic review

1. INTRODUCTION—GENERAL PERSPECTIVE AND MAIN RATIONALES

What differentiates human beings from animals is the superior psycho-cognitive activity, including the coordinated/complex, workable, actions of its highly correlated physical effecter: the upper limb, and especially the hand—as basis of our creative and modeler/draftsman kind interactions with the environment. This profound and subtle reality has been conceptualized during history by great thinkers, such as Aristotle (2005), Descartes, Newton and Kant (Lundborg, 2014).

Accordingly, finding solutions that address rehabilitation and/or functional assistance of neuromotor impairments at this level would have a remarkable positive impact: for the

ORIGINAL RESEARCH

Polydipsia-polyuria syndrome associated with traumatic spinal cord injury

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1. Introduction

Polydipsia-polyuria syndrome (PPS) associated with traumatic spinal cord injury (SCI) is rare. This syndrome occurs in patients with high neurological levels of SCI, injuries to the cervical or upper thoracic levels, with complete or incomplete paraplegia. Reported cases of PPS in SCI patients were diagnosed as full or partial central Diabetes Insipidus (DI) with or without neurosurgical intervention [1–3]. For example, Farel diagnosed a single male case of tetraplegia after SCI associated with partial DI [1]. Prasad described transient DI in three male SCI cases, two with injury at the cervical neurological level and one at the thoracic level [2]. Kusely presented a female case with paraplegia after SCI and central DI [3]. As we described above, the occurrence of DI associated with SCI is cited in just a few cases, but this challenging combination worsens patient quality of life (QoL) [4], requiring considerable physical, social, environmental, and psychological intervention to stabilize the patient and increase function [5]. However, the recognition, understanding, and proper management of this complex syndrome leads to prompt and appropriate neurorehabilitation [6].

The magnocellular nuclei of the hypothalamus is responsible

Abstract

Introduction: Polydipsia and polyuria associated with traumatic spinal cord injury (SCI) are rare consequences. The hypothetical pathophysiological mechanisms involve mild traumatic brain injury (TBI) and/or vagus dysfunction associated with spinal cord injury. **Methods:** In a retrospective study of 11 patients, we investigated associations between polydipsia-polyuria syndrome and various clinical and therapeutic factors: medullary section syndrome, neurological level, medication, neurosurgical intervention, kinesiotherapy program, associated comorbidities, functional level at discharge and patient quality of life (QoL). **Results:** The beginning of the kinetic program (Spearman correlation coefficient = 0.631) and desmopressin treatment (Spearman correlation coefficient = 0.705) had statistically significant effects on resolution of polydipsia-polyuria syndrome (PPS). Patient QoL was statistically significant improved after resolution of PPS (t -test, $p = 0.001$). **Conclusions:** Mobilization programs appear to promote resolution of PPS. Desmopressin treatment is beneficial and, together, medication and kinesiotherapy elevate patients' QoL. The association between SCI and transient PPS requires additional investigation in additional patients.

Keywords

Polyuria; Polydipsia; Spinal cord injury

for antidiuretic hormone (ADH) synthesis [7], which can be affected in several conditions, such as: hypophysectomies (adenoma, pinealoma, craniopharyngioma), meningioencephalitis, stroke, aneurysms, autoimmune diseases, metastasis (breast or bronch) [8,9], nephrogenic pathologies, and, last but not least, traumatic brain injury (TBI), which is one of the main causes of central DI [10,11].

Recognition of multiple causes of altered ADH secretion like Salt-wasting syndrome (SWS), syndrome of inappropriate antidiuretic hormone (SIADH), and DI is important when evaluating a patient who has suffered a complex polytrauma such as SCI associating polyuria and polydipsia.

In the present study of SCI patients, we aimed to investigate associations between PPS and various factors: neurological (medullary section syndrome, neurological level) therapeutic (medication, neurosurgical intervention, kinesiotherapy program), clinical (comorbid pathologies) and functional outcomes.

2. Method

Of the 4570 patients diagnosed with traumatic SCI and admitted between 2005–2020 in the Neuro-Muscular Rehabilitation

Review

Lithium Biological Action Mechanisms after Ischemic Stroke

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Abstract: Lithium is a source of great scientific interest because although it has such a simple structure, relatively easy-to-analyze chemistry, and well-established physical properties, the plethora of effects on biological systems—which influence numerous cellular and molecular processes through not entirely explained mechanisms of action—generate a mystery that modern science is still trying to decipher. Lithium has multiple effects on neurotransmitter-mediated receptor signaling, ion transport, signaling cascades, hormonal regulation, circadian rhythm, and gene expression. The biochemical mechanisms of lithium action appear to be multifactorial and interrelated with the functioning of several enzymes, hormones, vitamins, and growth and transformation factors. The widespread and chaotic marketing of lithium salts in potions and mineral waters, always at inadequate concentrations for various diseases, has contributed to the general disillusionment with empirical medical hypotheses about the therapeutic role of lithium. Lithium salts were first used therapeutically in 1850 to relieve the symptoms of gout, rheumatism, and kidney stones. In 1949, Cade was credited with discovering the sedative effect of lithium salts in the state of manic agitation, but frequent cases of intoxication accompanied the therapy. In the 1960s, lithium was shown to prevent manic and also depressive recurrences. This prophylactic effect was first demonstrated in an open-label study using the "mirror" method and was later (after 1970) confirmed by several placebo-controlled double-blind studies. Lithium prophylaxis was similarly effective in bipolar and also unipolar patients. In 1967, the therapeutic value of lithium was determined, included in the range of 0.5–1.5 mEq/L. Recently, new therapeutic perspectives on lithium are connected with improved neurological outcomes after ischemic stroke. The effects of lithium on the development and maintenance of neuroprotection can be divided into two categories: short-term effects and long-term effects. Unfortunately, the existing studies do not fully explain the lithium biological action mechanisms after ischemic stroke.

Keywords: review; lithium; ischemic stroke



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Topical Reappraisal of Molecular Pharmacological Approaches to Endothelial Dysfunction in Diabetes Mellitus Angiopathy

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Abstract: Diabetes mellitus (DM) is a frequent medical problem, affecting more than 4% of the population in most countries. In the context of diabetes, the vascular endothelium can play a crucial pathophysiological role. If a healthy endothelium—which is a dynamic endocrine organ with autocrine and paracrine activity—regulates vascular tone and permeability and assures a proper balance between coagulation and fibrinolysis, and vasodilation and vasoconstriction, then, in contrast, a dysfunctional endothelium has received increasing attention as a potential contributor to the pathogenesis of vascular disease in diabetes. Hyperglycemia is indicated to be the major causative factor in the development of endothelial dysfunction. Furthermore, many shreds of evidence suggest that the progression of insulin resistance in type 2 diabetes is parallel to the advancement of endothelial dysfunction in atherosclerosis. To present the state-of-the-art data regarding endothelial dysfunction in diabetic micro- and macroangiopathy, we constructed this literature review based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). We interrogated five medical databases: Elsevier, PubMed, PMC, PEDro, and ISI Web of Science.

Keywords: diabetes mellitus; endothelial dysfunction; microangiopathy; macroangiopathy

1. Introduction

Diabetes mellitus (DM) is a metabolic disorder of multiple etiology characterized by chronic hyperglycemia [1]. Micro- and macrovascular complications that develop in DM patients are a consequence of numerous factors, including, most importantly, endothelial dysfunction [2]. In normal physiological status, there is a suitable equilibrium of relaxing and contractile elements released from the endothelium. However, this delicate state is

Systematic Review

Main Cations and Cellular Biology of Traumatic Spinal Cord Injury

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Abstract: Traumatic spinal cord injury is a life-changing condition with a significant socio-economic impact on patients, their relatives, their caregivers, and even the community. Despite considerable medical advances, there is still a lack of options for the effective treatment of these patients. The major complexity and significant disabling potential of the pathophysiology that spinal cord trauma triggers are the main factors that have led to incremental scientific research on this topic, including trying to describe the molecular and cellular mechanisms that regulate spinal cord repair and regeneration. Scientists have identified various practical approaches to promote cell growth and survival, remyelination, and neuroplasticity in this part of the central nervous system. This review focuses on specific detailed aspects of the involvement of cations in the cell biology of such pathology and on the possibility of repairing damaged spinal cord tissue. In this context, the cellular biology of sodium, potassium, lithium, calcium, and magnesium is essential for understanding the related pathophysiology and also the possibilities to counteract the harmful effects of traumatic events. Lithium, sodium, potassium—monovalent cations—and calcium and magnesium—bivalent cations—can influence many protein–protein interactions, gene transcription, ion channel functions, cellular energy processes—phosphorylation, oxidation—inflammation, etc. For data systematization and synthesis, we used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology, trying to make, as far as possible, some order in seeing the “big forest” instead of “trees”. Although we would have expected a large number of articles to address the topic, we were still surprised to find only 51 unique articles after removing duplicates from the 207 articles initially identified. Our article integrates data on many biochemical processes influenced by cations at the molecular level to understand the real possibilities of therapeutic intervention—which must maintain a very narrow balance in cell ion concentrations. Multimolecular, multi-cellular: neuronal cells, glial cells, non-neuronal cells, but also multi-ionic interactions play an important role in the balance between neuro-degenerative pathophysiological processes and the development of effective neuroprotective strategies. This article emphasizes the need for studying cation dynamics as an important future direction.

Keywords: systematic review; cations; sodium; potassium; lithium; calcium; magnesium; iron; traumatic spinal cord injury



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PROSPECTIVE / EXPERIMENTAL EXOGENOUS HYDROGEN SULFIDE BASED THERAPIES IN SPINAL CORD INJURY

Gelu Onose^{1,2,3,4,5,6,7}, Constantin Munteanu^{2,3,4,5,6,7}

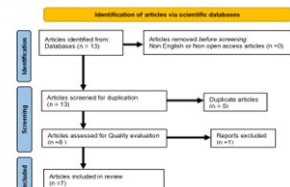
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Spinal cord injury usually causes severe and often permanent impairment or even loss of essential functions, such as voluntary/active motility, sensitivity, urinary and/or defecation control, erection/ejaculation/lubrication/fertility. These are, in most cases, devastating, severe and frequently irreversible, without yet, an effective cure. Prospective/experimental interventions were proposed using exogenous hydrogen sulfide (H₂S), an essential gaseous messenger with neuroprotective effects in many neurological disorders, including at the intimate gene-molecular level. H₂S plays an essential role in combating oxidative stress, inflammation, neuropathic pain, and apoptosis, and respectively influences autophagy, angiogenesis, and cardiovascular protection. Moreover, H₂S has a neuroprotective effect against oxygen-glucose deprivation-induced neuron injury. The protective effects of inhaled hydrogen sulfide were associated with inhibition of glial activation and upregulation of antioxidant and detoxification proteins, preventing the systemic inflammation induced by lipopolysaccharide.

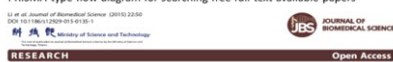
Methods. This paper relies, as documentation, on a PRISMA approach.

Results. We have found initially 13 articles. After fulfilling the results of the PRISMA, remained seven papers. We have also used some free identified related works to strengthen our documentation base.

Conclusions. H₂S has been shown in experimental studies on animal models to exert neuroprotective actions in SCI by mainly: improving spinal cord oxygen tension, decreasing apoptosis, reducing inflammation, attenuating oxidative stress and promoting angiogenesis and autophagy. Anyway, H₂S medical significance, although it is included in actual therapeutic mud or balneary used sulfurous waters, is not still fully understood.



PRISMA-type flow diagram for searching free full-text available papers



Hydrogen sulfide protects spinal cord and induces autophagy via miR-30c in a rat model of spinal cord ischemia-reperfusion injury

Lei U¹, Hongkum Jiang¹, Yunpeng U¹ and Yan-ping Guo¹

Vol. 44, No. 8

Regular Article

Hydrogen Sulfide Improves Functional Recovery in Rat Traumatic Spinal Cord Injury Model by Inducing Nuclear Translocation of NF-E2-Related Factor 2

Chang Xu^{1,2}, Meng Zhang^{1,2}, Guangping Zhang¹, Sheng Yan^{3,4} and Weiqi Yuan^{5,6}

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Research Article

Hydrogen Sulfide Inhibits Autophagic Neuronal Cell Death by Reducing Oxidative Stress in Spinal Cord Ischemia Reperfusion Injury

Lei Xu^{1,2}, Silei Yu^{2,3}, Kai Yang^{2,3}, Changping Li^{1,2} and Yu Liang^{1,2}

The FASEB Journal • Research Communication

A hydrogen sulfide-releasing cyclooxygenase inhibitor markedly accelerates recovery from experimental spinal cord injury

Michela Campolo¹, Emanuela Esposito¹, Akbar Ahmad², Rosanna Di Paolo³, John L. Wallace⁴, and Salvatore Cuzzocrea^{1,2}

Frontiers
in Pharmacology

Hydrogen Sulfide Ameliorates Blood-Spinal Cord Barrier Disruption and Improves Functional Recovery by Inhibiting Endoplasmic Reticulum Stress-Dependent Apoptosis

Haoxi Wang¹, Yanyang Wu¹, Wenqian Zhang¹, Jialin Li¹, Xian Li¹, Zhenzhen Li¹, Ganggang Wang¹, Xu Sun¹, Yanning Liu¹, Liang Xue¹, Jiang Wu¹, Xiaohong Wu¹, and Jian Zhou¹



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Inhaled hydrogen sulfide prevents neuropathic pain after peripheral nerve injury in mice

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IN VITRO EXPERIMENTAL DATA REGARDING HEALTH EFFECTS OF TECHIRGHIOI MUD EXTRACTS ON FIBROBLAST CELL CULTURES

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Background and aims. Pelotherapy or mud therapy is a balneological method that triggers local tissue and general functional reactions, inhibiting or activating some intermediate enzymes and metabolite systems, but its mechanisms of action on certain pathologies are still not completely understood. Natural therapeutic factors such as mud and sulfurous mineral therapeutic waters are used in sanatoriums and rehabilitation clinics as baths or topical applications on the body for many affections in the Neuro-Myo-Arthro-Kinetic (NMAK) pathology. Cellular and molecular biological investigations performed by electrophoresis, ELISA, and Western blotting on primary fibroblasts cultures obtained from Wistar rats in our work target two main physiological mechanisms, respectively the inflammatory processes and the oxidative stress balance, presumptively influenced by mud extracts. Previous scientific data say that, during the inflammatory process, different cell types are recruited, including fibroblasts, which respond to various intercellular and microenvironment signals. This leads to the regulated production of different pro- and anti-inflammatory mediators including cytokines, such as tumor necrosis factor (TNF)-α and interleukins (IL)-1β and IL-6, chemokines, and enzymes such as cyclooxygenase (COX)-2, all of which play critical roles in controlling the inflammatory process. The concept of oxidative stress caused by free radicals represents arguments of taking into account biomarkers of oxidative stress. The oxidative and reductive activity of enzymes that act on glutathione, thioredoxin, and other substrates of interest in the oxidation-reduction process reflects not only the level of antioxidative protection but are also relevant biomarkers for rheumatic degenerative diseases. In previous studies on therapeutic mud, it was presented the fractionation of humic substances using the pH and solvent polarity variation and was spectrophotometrically characterized based on absorption in the wavelength range 340-700 nm humic acids and fulvic acids differentiated based on solubility and molecular mass.

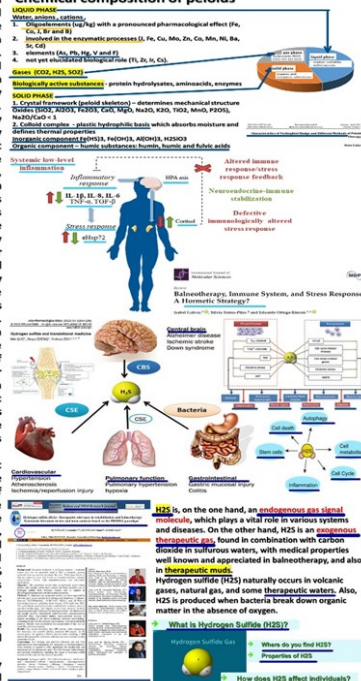
Methods. To obtain the primary culture of glial cells, Wistar rat pups were used, aged 1-4 days, taken from the pups of the National Institute for Research and Development in the Field of Pathology and Biomedical Sciences "Victor Babes". Tissue explants is placed in DMEM medium on Petri dishes. Cells were grown in DMEM medium with 4500mg/l glucose, 25 mM HEPES, 100 U/ml penicillin, 50 µg/ml neomycin, and 100 µg/ml streptomycin. The medium was supplemented with 15% fetal calf serum. The cell culture dishes were incubated at 37°C, 5% CO₂, and 90% humidity. After 24 hours, the culture medium was changed to remove dead cells and cell debris. After the first medium change, the medium was replaced with an equal volume of fresh, pre-warmed DMEM medium every 3 days. Phase contrast microscopy allows the study of living, unfixed and uncolored cells.

Results. Phase microscopy was used to observe the morphology of isolated fibroblast cell cultures. These observations allowed the interpretation of morphological development as a consequence of time in culture. After 7 days in culture, the medium used was supplemented with 15% fetal calf serum. The morphology of control cell cultures versus those treated with mud extract will be presented. IL6 and TNFα ELISA tests will be performed for cell lysates and respectively preeluted cultures medium.

Conclusions. Obtained new data on the important molecular markers for inflammatory processes and oxidative stress balance will constitute a new research strategy applied for old natural remedies, bringing together mud therapy and cell cultures studies

Keywords: Fibroblasts cell cultures, mud extract, IL6, TNFα.

Chemical composition of peloids





Systematic Review

Considerations about Hypoxic Changes in Neuraxis Tissue Injuries and Recovery

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Abstract: Hypoxia represents the temporary or longer-term decrease or deprivation of oxygen in organs, tissues, and cells after oxygen supply drops or its excessive consumption. Hypoxia can be (para)-physiological—adaptive—or pathological. Thereby, the mechanisms of hypoxia have many implications, such as in adaptive processes of normal cells, but to the survival of neoplastic ones, too. Ischemia differs from hypoxia as it means a transient or permanent interruption or reduction of the blood supply in a given region or tissue and consequently a poor provision with oxygen and energetic substratum-inflammation and oxidative stress damages generating factors. Considering the implications of hypoxia on nerve tissue cells that go through different ischemic processes, in this paper, we will detail the molecular mechanisms by which such structures feel and adapt to hypoxia. We will present the hypoxic mechanisms and changes in the CNS. Also, we aimed to evaluate acute, subacute, and chronic central nervous hypoxic-ischemic changes, hoping to understand better and systematize some neuro-muscular recovery methods necessary to regain individual independence. To establish the link between CNS hypoxia, ischemic-lesional mechanisms, and neuro-motor and related recovery, we performed a systematic literature review following the "Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)" filtering method by interrogating five international medical renowned databases, using, contextually, specific keywords combinations/"syntaxes", with supplementation of the afferent documentation through an amount of freely discovered, also contributive, bibliographic resources. As a result, 45 papers were eligible according to the PRISMA-inspired selection approach, thus covering information on both: intimate/ molecular path-physiological specific mechanisms and, respectively, consequent clinical conditions. Such a systematic process is meant to help us construct an article structure skeleton giving a primary objective input about the assembly of the literature background to be approached, summarized, and synthesized. The afferent contextual search (by keywords combination/syntaxes) we have fulfilled considerably reduced the number of obtained articles. We consider this systematic literature review is warranted as hypoxia's mechanisms have opened new perspectives for understanding ischemic changes in the CNS neuraxis tissue/cells, starting at the intra-cellular level and continuing with experimental research to recover the consequent clinical-functional deficits better.

Keywords: hypoxia; ischemia; neuraxis; hypoxic-ischemic injuries; neural ischemia; neural tissue hypoxic injuries; neuro-recovery; neurohabilitation



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Translation of the Fugl-Meyer assessment into Romanian: Transcultural and semantic-linguistic adaptations and clinical validation

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Purpose: The Fugl-Meyer Assessment (FMA) scale, which is widely used and highly recommended, is an appropriate tool for evaluating poststroke sensorimotor and other possible somatic deficits. It is also well-suited for capturing a dynamic rehabilitation process. The aim of this study was to first translate the entire sensorimotor FMA scale into Romanian using the transcultural and semantic-linguistic adaptations of its official afferent protocols and to then validate it using the preliminary clinical evaluation of inter- and intra-rater reliability and relevant concurrent validity.

Methods: Through three main steps, we completed a standardized procedure for translating FMA's official afferent evaluation protocols into Romanian and their transcultural and semantic-linguistic adaptation for both the upper and lower extremities. For relevant clinical validation, we evaluated 10 patients after a stroke two times: on days 1 and 2. All patients were evaluated simultaneously by two kinesi-physiotherapists (generally referred to as KFT1 and KFT2) over the course of 2 consecutive days, taking turns in the roles of an examiner and observer, and vice versa (inter-rater). Two scores were therefore obtained and compared for the same patient, i.e., being afferent to an inter-rater assay by comparing the assessment outcomes obtained by the two kinesi-physiotherapists, in between, and respectively, to the intra-rater assay: based on the evaluations of the same kinesi-physiotherapist, in two consecutive days, using a rank-based method (Svensson) for statistical analysis. We also compared our final Romanian version of FMA's official protocols for concurrent validity (Spearman's rank correlation statistical method) to both of the widely available assessment instruments: the Barthel Index (BI) and the modified Rankin scale (mRS).



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