MEDICAL BIOMAGNETISM AND DETOXIFICATION - PRESENTATION OF A PROTOCOL

Regina Mara Gomes[1]

Arleide Schramm[2]

Adriane Viapiana Bossa[3]

Angela Mara Rambo Martini[4]

Livia Blanche Mathieu Graf[5]

Abstract: Medical Biomagnetism (MB) is an integrative technique developed by Isaac Goiz Durán. This technique involves the application of Static Magnetic Fields (SMF) on bioelectromagnetic dysfunctions called Biomagnetic Pairs (BMP). The technique identifies pH imbalances in anatomical areas of the body in order to correct them through the application of me-

1 Postgraduate student in Biomagnetism and Bioenergetics Applied to Health, Instituto Par Magnético - IPM / Faculty of Governance, Engineering and Education of São Paulo - FGE. SP, Brazil.

2 Postgraduate student in Biomagnetism and Bioenergetics Applied to Health, Instituto Par Magnético - IPM / Faculty of Governance, Engineering and Education of São Paulo - FGE. SP, Brazil.

3 Co-supervising Professor of the Graduate Course in Biomagnetism and Bioenergetics Applied to Health, Instituto Par Magnético - IPM / Faculty of Governance, Engineering and Education of São Paulo - FGE. SP, Brazil.

4 Co-supervising Professor of the Graduate Course in Biomagnetism and Bioenergetics Applied to Health, Instituto Par Magnético - IPM / Faculty of Governance, Engineering and Education of São Paulo - FGE. SP, Brazil.

5 Advising Professor of the Graduate Course in Biomagnetism and Bioenergetics Applied to Health, Instituto Par Magnético - IPM / Faculty of Governance, Engineering and Education of São Paulo - FGE. SP, Brazil.

ISSN: 2763-5724
Vol. 03 - n 02 - ano 2023
Editora Acadêmica Periodicojs

dium-intensity magnets. In this way, it influences the electrical and biochemical activity of the cell membrane aiming to restore metabolic balance benefiting the elimination of toxins through the body. It leads to prevent and recover Normal Energy Level (NEL) promoting homeostasis. We are increasingly exposed to large amounts of toxins from natural and processed foods, medications, environmental pollutants which overload our organ systems. The body is responsible for detoxifying naturally through cellular metabolism. However, when the body has supra-physiological levels of toxins, this system becomes weakened for this function presenting symptoms. The aim of this study is to present a protocol for MB detoxification of the human body, through descriptive, qualitative, and narrative literature review. A MB detoxification protocol was selected which can be applied by healthcare professionals, therapists, and self-applied as a possible complement to allopathic medicine deserving to be studied.

Keywords: Medical Biomagnetism; Biomagnetic Pair; Detoxification; Static Magnetic Fields; Protocol.

INTRODUCTION

We are exposed to toxins on a daily basis, from the water we drink to the polluted air we breathe, including processed foods with additives, preservatives, dyes, and substances that penetrate the skin through topical use which may contain heavy metals in their formulation (CARRERO; PEREIRA 2020). After the Industrial Revolution,

the progressive acceleration of pollutant emissions into the air has reflected in the high demand for emergency services, respiratory disease symptoms such as asthma, lung cancer, chronic obstructive pulmonary disease (COPD) that makes breathing difficult due to chronic obstruction of airflow, and deaths (ARBEX et al., 2012).

A survey conducted by Roan (2017) provided 5,420 attendances through the Toxicological Information and Assistance Center (CIATOX-UNICAMP) identifying that the causes of drug poisoning are mainly due to self-medication. In addition, what is not absorbed discharges in river which is collected, treated, and returned to households. Contaminants of Emerging Concern (CEC) in air, water, and soil are of concern due to their adverse impact on human health and the environment. CEC sources appear in different forms of domestic and industrial activities. There are key components of many products used in our daily lives, such as personal hygiene products, pharmaceuticals, and hormones detected in surface waters (SERVADIO et al., 2021; YADAV et al., 2021). These concentrations detected in municipal sewage, surface waters, and water may vary, and even if they are low their chemical structures are susceptible to bioaccumulation in the body (CHEN; LIN; ZHUANG, 2020).

The Vice-Presidency for Environment, Health Care, and Health Promotion of in Brazil, based on FIOCRUZ (BRAZIL, 2018) reveals that pesticides may cause health damage such as hormonal and reproductive alterations, liver and kidney damage, immune dysfunctions, cognitive

and neuromotor disorders, and even cancer. In traditional agriculture, the herbicide glyphosate appears in more than a hundred food products; about 62% in use and commercialization in Brazil. According to Costa; Mello; Friedrich (2017) among the most used pesticide groups in Brazil in 2012, about 200,000 tons commercialized were responsible to the loss of biodiversity and the appearance of diseases. The expansion of the industrial sector makes the progressive increase in environmental pollution unquestionable including human super exposure to heavy metals, what lead it to a public health issue (LI et al., 2021). According to the International Agency for Research on Cancer (IARC), the glyphosate herbicide and malathion and diazinon insecticides were classified as group 2A (probable carcinogens for humans), and tetraclorvinfos and parathion insecticides as group 2B (possibly carcinogenic to humans) (IARC 2015, 2017, 2018). From the health of the farmer to the consumer's health, it has repercussions throughout the social ecosystem. For example, the case of a retired farmer by the National Institute of Social Security (INSS-BRAZIL) that developed Non-Hodgkin's Lymphoma while using glyphosate in her corn production (BRASIL, 2021).

> The carcinogenic effects caused by pesticides or other agents can be due to different mechanisms: DNA repair alteration or genomic instability, electrolytic nature, genotoxicity (chromosomal damage), epigenetic alterations, oxidative stress, chronic inflammation, immunosuppression, modulation of receptor-

-mediated effects, cell immortalization, cell proliferation and cell death (COSTA; MELLO; FRIEDRICH, 2017).

Another form of intoxication occurs through aluminum salts that are widely used as active antiperspirants in cosmetic industry. Experimental observations indicate that long-term application of these salts may be correlated with the development and progression of breast cancer (BOEEGMAN; BATES, 2022). Aluminum is a heavy metal that, once absorbed by the body, may be incorporated into the bone matrix and absorbed by osteoclasts which are cells in bone tissue involved in bone remodeling. It accumulates in spaces where collagen should be present during the process of bone demineralization interfering with the accumulation of calcium in the bone and leading to osteomalacia (bone weakness) (KLEIN, 2019). According to Krewski et al. (2021), aluminum is used daily in industries with complex and multidimensional effects, such as interruption or inhibition of enzyme activities, alteration of protein synthesis, function of nucleic acid and cell membrane permeability. It hinders DNA repair altering the stability of its organization. It inhibits protein phosphatase 2A (PP2A) increasing the production of reactive oxygen species (oxidative stress) and decreasing the activity of antioxidant enzymes. It also change the cellular iron homeostasis altering the NF-KB pathway, leading to apoptosis (programmed cell death). Li et al. (2021) report that excessive ingestion of heavy metals such as arsenic, manganese, mercury, aluminum, lead, ni-

ckel, bismuth, cadmium, copper, zinc, and iron promotes neurodegeneration through injuries in astrocytes.

The biological process of elimination occurs through detoxification which eliminates xenobiotics, toxic, and biologically active substances that damage the body such as agrochemicals, benzene, toluene, and drugs. Excretion occurs when a substance is eliminated by the body and toxic agents are released through different routes. Most often, these toxins are excreted as water-soluble products after biotransformation. When toxins are not eliminated through excretion pathways, they promote fluid retention in tissues leading to symptoms of disease (GRANT, 1991). The most significant pathways are urinary, fecal, and pulmonary. While the liver eliminates substances by transforming them into their metabolites and excreting via bile, the kidneys promote excretion of the substance and its metabolites with urine (OGA, 2008; SILVERTHORN, 2017).

According to Grant (1991), the liver plays an important role in protecting the body against potentially toxic chemical injuries through its ability to convert lipophilic substances into water-soluble metabolites that may be efficiently eliminated from the body via urine. This ability is mediated by a wide variety of xenobiotic enzymes whose catalyze oxidation. The liver is the first organ to receive blood filtering 1.5L of blood per minute containing the results of digestion (nutrients and toxins). The presence of stones that generate total or partial obstruction leads to a decrease in the capacity to detoxification. The liver neutralizes toxins before sending the

blood to the heart via the inferior vena cava. It performs the enzymatic transformation of toxins generated by the external and internal environment being the first line of defense with approximately 60% of detoxification enzymes (SILVERTHORN 2017; PÉREZ MARTÍNEZ, 2020).

The pancreas plays a central role in digestion and absorption, as well as in the utilization and storage of energy substrates integrating the digestive and endocrine systems. It consists of two structurally distinct and integrated glandular systems, the endocrine and exocrine pancreas (LEUNG, 2010). The endocrine system is responsible for the production of some hormones such as insulin, glucagon, somatostatin, gastrin, and pancreatic polypeptide, which have a direct relationship with blood glucose levels (KOEPPEN; STATON, 2009). The exocrine system integrates the digestive system involving synthesis and secretion of the digestive enzymes (pancreatic juice), which digest proteins, carbohydrates, and fats. One of the functions of this organ is to serve as a means of excretion of the degradation products of the blood, such as bilirubin from hemoglobins and cholesterol synthesized by the liver. It participates indirectly in detoxification by producing digestive enzymes that will degrade bile residues and excess of cholesterol that will be eliminated in the small intestine (SILVERTHORN, 2017).

The kidneys filter the blood, remove products of cellular metabolism through urine, and process bodily fluids several times per day. They perform homeostatic control by regulating the ionic composition of the blood and blood pressure excreting H+

ISSN: 2763-5724
Vol. 03 - n 02 - ano 2023
Editora Acadêmica Periodicojs

or absorbing HCO3- (KOEPPEN and STATON, 2009). They are the central organ for the maintenance of body water through the concentration and dilution of urine; the water reabsorption is regulated by different aquaporins which are clinical biomarkers and therapeutic targets for kidney diseases (HONG; PARK, 2021; SU et al., 2020).

The lungs are constantly exposed to harmful agents such as environmental toxins and other irritants. When there is an excess of intoxicating agents, the lungs become imbalanced leading to some pathologies such as allergies, colds, flu, and cough (GUYTON; HALL, 2011). Lung cancer is related to genetic predisposition specifically the genetic polymorphism of various enzymes involved in detoxification and xenobiotic metabolism (GRESNER, 2007).

Static Magnetic Fields (SMF) and Medicinal Biomagnetism (MB)

The human body produces biomagnetic fields that are detected in some parts of the body including the brain, liver, and heart. The heart was the first organ with recorded detection (BAULE; MCFREE, 1963). Magnetic fields can exert influence on ions and ion channels, such as calcium channels. In this way, they can also influence the cell membrane, actin filaments (protein chains), and other cellular constituents (ROSEN, 2003).

The study of the biological effects of static magnetic fields can elucidate the biological and physical mechanisms involved, promoting a greater understanding of the phenome-

ISSN: 2763-5724
Vol. 03 - n 02 - ano 2023
Editora Acadêmica Periodicojs

> na of magnetobiology, which studies the effects of exposure to external magnetic fields on living organisms (PEREZ, 2022).

In 1963, Barnothy claims that the magnetic field could be a powerful analytical and therapeutic tool in the medicine field. In recent decades, magnetic fields have been widely used in research to develop new technologies and therapeutic practices, such as electric motors, magnetic cards, energy production in hydroelectric plants, radio and television waves, telecommunications devices, artificial intelligence, 5G, X-rays, electrocardiograms, electroencephalograms, and magnetic resonance imaging.

One of these therapies began its development in 1988 after Isaac Goiz Durán participation in the First Biomagnetism Course in Guadalajara. This was a NASA continuing education program for doctors at the Faculty of Medicine of the University of Guadalajara taught by Richard Broeringmeyer, a physician from the American Space Agency and a recognized authority worldwide. Broeringmeyer presented the theory of the static magnetic field generated by medium-intensity magnets. This field can immediately detect bioenergetic changes in a part of the human body within the measured magnetic field. According to these studies, when the analyzed part of the body shows a pH alteration, the human body reacts to the stimulus by activating the defense system through the Right Hemicorp Shortening Phenomenon. This pH dysfunction would support an energy imbalance at the affected site which is normalized

by applying a magnetic field with opposite polarity to the found field (GOIZ DURÁN, 2003, 2008, and 2014; DAVIS and RAWLS, 1990; BROERINGMEYER, 1991; PHILPOTT, 2015).

Based on these studies, in the same year, Isaac Goiz Durán presented his thesis following the concepts of biomagnetic poles from Richard and argued that they are generated by temperature variations or pH imbalances. When they leave the natural limit of organic entropy, the Biomagnetic Pair (BMP) is generated and sustained by vibrational and energetic resonance (GOIZ DURÁN, 2003, 2008, and 2014; DAVIS and RAWLS, 1990; BROERINGMEYER, 1990).

To return to the balance of the structures involved the MB uses a pair of magnets between 1,000 and 7,500 Gauss as a treatment tool. The north face (black negative) may be impacted by a therapeutic magnet with the same polarity as the magnetic field generated. Similarly, the south face (red positive) is simultaneously impacted on the resonance point where there is a build-up of H+ ion charges, as shown in Figure 1. By definition, a BMP is a set of bioelectric, dysfunctional, resonant charges related to a pathology or group of symptoms (GOIZ DURÁN, 2008; BROERINGMEYER, 1991).

ISSN: 2763-5724

Vol. 03 - n 02 - ano 2023

Editora Acadêmica Periodicojs

Figure 1: Liver/Right Kidney Biomagnetic Pair

The image shows an accumulation of OH^- in the liver region where the north pole of the magnet is applied. The accumulation of H^+ is observed in the kidney region, where the south pole of a second magnet is applied. When viewing the red color of the magnet, it is the black color that is in contact with the body and vice-versa. Source: Bossa (2021c).

The application of magnets is called impactation in the therapeutic system of MB. This may generate a high-frequency current (MARTÍNEZ, 2021) in the body providing depolarization of excessive ionic charges, promoting homeostasis through a neutralization reaction (MASA et al., 2020). Thus, SMF generated by magnets beneficially influence organic bioelectricity restoring the functions of biological systems (CASTEJÓN, 2015; PHILPOTT, 2015; GOIZ DURÁN, 2008; MADOÑERO DE LA CAL, 2004).

According to Ghebreyesus (2019), ensuring access to healthcare is a duty of the State and a right of the citizen; it cannot be considered an expense but an investment in the population. Ending poverty, mitigating social inequalities, and allowing society to participate in promotion of the health help us to maintain the principles of universality,

comprehensiveness, and equity defended by the Brazilian Unified Health System (SUS). These facts are contemplated in the 1988 Brazil Constitution which guarantees equality, freedom, access to healthcare, public education, and social benefits.

According to Brazilian Institute of the Statistics (IBGE) more than 70% of the Brazilian population depends exclusively on SUS (BRASIL, 2014). The National Policy on Integrative and Complementary Practices (PNPIC) has the main objective to incorporate and implement Integrative and Complementary Practices (ICP) in SUS (BRASIL, 2020). Strengthening actions to promote health is indeed an intelligent and necessary strategy for the development of Brazil. Health is a heritage of Brazilian society. The integration of integrative and complementary techniques within SUS is of paramount importance to the Brazilian population (BRASIL, 2015).

MB is a non-invasive, low-cost technique with very few contraindications supported in the biomedical field. The main technique is based on the application of magnetic fields presenting a promising future both in its clinical application and in scientific research (MADOÑERO DE LA CAL, 2004; PHILPOTT, 2015; CARNEIRO et al., 2000; MARKOV, 2013; GOIZ DURÁN, 2008; MARTÍNEZ, 2018).

Introduction of "TOP 5" Protocol - Detoxification

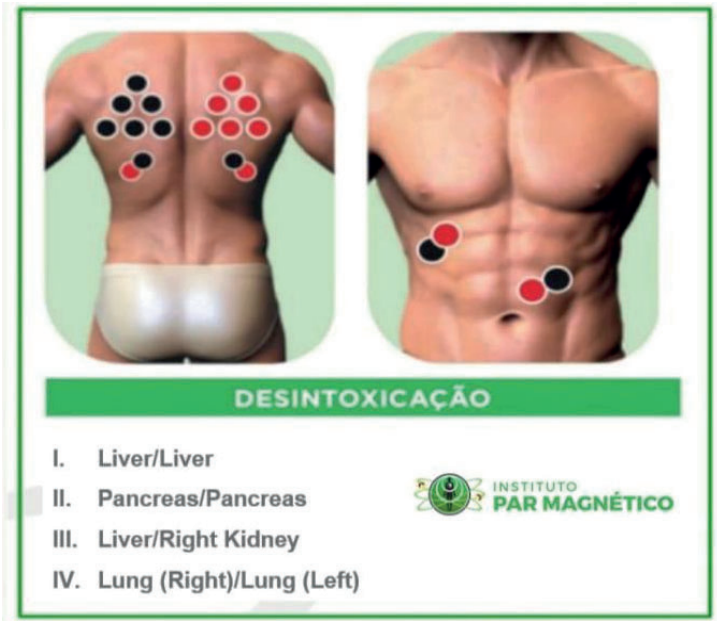
The gold standard clinical examination of BMP is the Complete Scanning (CS) which should be performed by a trained Biomagnetic professional. Through the many documented

ISSN: 2763-5724
Vol. 03 - n 02 - ano 2023
Editora Acadêmica Periodicojs

experiences by Isaac Goiz Durán was observed a repetition pattern in some of the BMP related to specific symptoms. Thus, several protocols were created in order to identify the most prevalent pairs (MARTÍNEZ, 2018; BOSSA, 2021a).

In this study, the protocol called "TOP 5 Protocol - Detoxification" (Figure 2) will be presented. It should be applied topographically to the detoxification organs identified by scanning of people with intoxication symptoms. This protocol is contraindicated for pregnant and lactating women, individuals with pacemakers or any electronic device without the accompaniment of a specialized professional and hemodynamically unstable patients (patients with the potential to evolve into circulatory shock) (MARTÍNEZ, 2019a).

Figure 2: TOP 5 Protocol – Detoxification



ISSN: 2763-5724

Vol. 03 - n 02 - ano 2023

Editora Acadêmica Periodicojs

The image demonstrates the anatomical impactation through BMP. When red is observed, the black side of the magnet is in contact with the body. When the black side is observed, the red is in contact with the body. The magnets should be applied over the detoxification organs. Source: Bossa, 2021b. Description of Pairs: Front - Liver/Liver: increases the liver's ability to eliminate toxins; Pancreas/Pancreas: increases the pancreas's ability to eliminate toxins; Liver/Right Kidney: acts on detoxification; Back - Kidney (Right/Left)/Kidney (Right/Left): produces muscle relaxation; relaxes the renal artery favoring diuresis helping blood pressure regulation; stimulates glomerular filtration enhancing detoxification; Lung (Right)/Lung (Left): increases the lungs' ability to eliminate toxins (GOIZ DURÁN, 2008; MARTÍNEZ, 2019a).

Due to the importance of these organs for health through the physiological detoxification of the body and recognizing the exposure to toxins of various origins is increasing nowadays, the aim of this study is to present a protocol to enhance the natural detoxification of the body.

MATERIALS AND METHODS

This study is characterized for a descriptive, qualitative, and narrative research including integrative reviews available in Portuguese, Spanish, and English languages. To carry out this research, data collection for the articles was conducted on the digital platforms PubMed, Scientific Electronic Library Online (SCIELO), and Virtual Health Library (BVS). The articles were selected for throughout the years 2021 and 2022. The selection of the platforms was based on their accessibility, veracity, and scientific rigor. For research articles, health science descriptors and keywords such as “poisoning”, “human detoxification”, “Static Magnetic Fields”, and “Integrative and Complementary Practices” were used. The inclusion criteria were articles with a Digital Object Identifier (DOI) related to the study’s theme, available in full online, and written in Por-

tuguese, Spanish, or English. A master's dissertation and a doctoral thesis on Static Magnetic Fields were included as they were relevant to the study. Due to the lack of MB articles, government websites, the Ministry of Health, BVS, CIATOX, DATASUS, FIOCRUX, IARC, and RENACIAT, newspapers, magazines, jurisprudence, books, and booklets were accepted to meet the study's objectives; articles without a DOI were excluded.

RESULTS AND DISCUSSION

After the selection of studies applying inclusion and exclusion criteria, seventeen articles were found in the electronic databases of PubMed and two articles in SCIELO, totaling nineteen articles; one doctoral thesis, one master's dissertation, and three booklets. Publications and government sites of greater relevance were selected to meet the study's objectives, totaling nine references. The result of the exploratory research for the presentation of the Top 5 Detoxification Protocol, shown in Figure 2, is used in the treatment of more than 70 symptoms and pathologies (MARTÍNEZ, 2019b).

The Detoxification Protocol consisting of CS and the Top 5 Detoxification Protocol presented by MB have five sessions. Firstly, an CS is performed (BOSSA, 2021a). Then, the Top 5 Detoxification Protocol is applied keeping the magnets for 30 minutes. In this protocol, specific therapeutic magnets from MB are used and impacted on the lungs. The right side contains a north polarity (black side on the skin) while the left side has a south polarity (red side on the skin). Magnets with north and south

polarity should also be impacted on the anatomical point of the pancreas and liver. In addition, it must be applied double magnets on the right and left kidneys, as described in Figure 2. Magnets should be applied over clothing for five consecutive weeks.

The application of this protocol is justified by the function performed by each of these organs which are essential for the proper functioning of the body as a whole and for health conditions. Durán (2008) developed MB based on his previous knowledge in the medical field studying the therapeutic action of each BMP in conjunction with the already known function of each tissue. The mapping of BMP was related to medical semiology (BOSSA, 2021b).

For MB, the process of detoxification of the body depends mainly on the ideal function of the pancreas, liver, kidneys, and lungs. The optimization of the function of these organs may be potentiated with the application of BMP. When magnets with north and south polarity are impacted on the liver area, they enhance its ability to eliminate endocrine and exogenous toxins. The north polarity magnet applied to the liver aims to "relax" the artery, releasing toxins, and the south pole on the right kidney tones the organ promoting vitality to improve its function. The Liver/Liver BMP receives the application of north and south polarity optimizing its ability to eliminate toxins by the same action generated for each pole (GOIZ DURÁN, 2008).

In the Pancreas/Pancreas BMP, the application of north and south polarity stimulates the exogenous pathway acting on blood flow and dilation of

the pancreatic ducts which will meet with the canaliculus. It leads the right way of the bile produced in the liver helping in the production of digestive enzymes that will degrade the byproducts of the bile. There is also toning action on the organ giving it vitality (GOIZ DURÁN, 2008). In the Pulmonary Right/Pulmonary Left BMP occurs an increase in the lungs' ability to eliminate toxins through celiac cells because the respiratory tree is lined with cilia that are defense mechanisms called the mucociliary mechanism; it has the ability to protect the lungs against environmental aggressions mainly pollutants. It should be used in a pyramidal format: one magnet for the pulmonary apex, two magnets for the middle lobe, and three magnets for the base on both lungs, enhancing gas exchange and CO2 elimination (GOIZ DURÁN, 2008; MARTÍNEZ, 2019b).

The basis of MB action is the effect exerted by SMF on living beings. The effects of SMF on cells, animals, plants, and living beings have been studied and their therapeutic action is gradually being clarified (MADOÑERO DE LA CAL, 2004; PHILPOOT, 2015; MARKOV, 2013; BROERINGMEYER, 1991; PEREZ, 2022; PERSON, 2018; ROSEN, 2003).

The TOP 5 Protocol - Detoxification may be used in conjunction with any other form of treatment in both traditional allopathic treatments and ICP. A literary study is necessary to present the protocol as a tool for easy application, self-application, and to provide a new detoxification alternative without the use of medication (MARTÍNEZ, 2018).

CONCLUSION AND FUTU-

RE PERSPECTIVES

This system needs to be evaluated under scientific methodology and research is necessary to describe and prove the efficacy of SMF in detoxification treatment. This tool may have the potential to be a low-cost, non-invasive, painless alternative with minimal side effects, without the need for allopathic medicine enhancing the detoxification process. Making MB protocols viable allows for the study of the technique, so that it can be tested, evaluated, qualified, and more widely disseminated.

REFERENCES

ARBEX, Marcos Abdo; SANTOS, Ubiratan de Paula; MARTINS, Lourdes Conceição; SALDIVA, Paulo Hilário Nascimento; PEREIRA, Luiz Alberto Amador; BRAGA, Alfésio Luis Ferreira. A poluição do ar e o sistema respiratório. Jornal Brasileiro de Pneumologia, v. 38, n. 5, p. 643-655, out. 2012. FAPUNIFESP (SCIELO). http://dx.doi.org/10.1590/s1806-37132012000500015. Disponível em: https://www.scielo.br/j/jbpneu/a/sD3cLkXqQwmDFpgzsyj7gBm/?lang=pt. Acesso em: 12 out. 2022.

BOEGMAN, R. J.; BATES, L. A. Neurotoxicity of aluminum. Canadian Journal Of Physiology And Pharmacology, v. 62, n. 8, p. 1010-1014, 1 set. 1984. Canadian Science Publishing. http://dx.doi.org/10.1139/y84-170. Disponível em: https://pubmed.ncbi.nlm.nih.gov/6207901. Acesso em: 20 maio 2022.

BARNOTHY, Madeleine F.. Efeitos Biológicos de Campos Mag-

néticos, v. 1 Editora: Springer Nova York, NY 1964. Disponível em: https://doi.org/10.1007/978-1-4899-6578-3. Acesso em: 08 mar. 2022

BAULE, Gerhard; MCFEE, Richard. Detection of the magnetic field of the heart. American Heart Journal, v. 66, n. 1, p. 95-96, jul. 1963. Elsevier BV. http://dx.doi.org/10.1016/0002-8703(63)90075-9. Disponível em: https://pubmed.ncbi.nlm.nih.gov/14045992/. Acesso em: 30 maio 2022.

BOSSA, Adriane Viapiana. Protocolo de Rastreio do Biomagnetismo Medicinal. Cascavel/PR: Editora Independente; Volume 1, 5ª ed. Jan. 2021a. Disponível em: www.institutoparmagnetico.com.br. Acesso em: jun. 2021.

BOSSA, Adriane Viapiana. Biomagnetismo Medicinal Avançado. Cascavel/PR: v. 1, 3ª ed. Editora Independente, 2021b. Disponível em: www.institutoparmagnetico.com.br. Acesso em: jul. 2021.

BOSSA, Adriane Viapiana. Apostila de Biomagnetismo Medicinal. Cascavel/PR. Editora Independente; v.1, ed. 12. Ago. 2021c. Disponível em: www.institutoparmagnetico.com.br. Acesso em: nov. 2022.

BRASIL. Ministério da Saúde. Secretaria de Atenção Primária à Saúde. Brasília - DF, 2006. Disponível em: https://aps.saude.gov.br/smp/smpoquee. Acesso em: 1º set. 2022.

BRASIL. Ministério da Saúde. Secretaria de Atenção à Saúde. Política Nacional de Práticas Integrativas e Complementares no

SUS. Departamento de Atenção Básica. Brasília - DF 2ª ed. 2015. Disponível em: www.saude.gov.br/bvs. Acesso em: 1º set. 2022.

BRASIL. Ministério da Saúde. Política Nacional de Práticas Integrativas e Complementares em Saúde. Brasília - DF, Publicado em 20/11/2020 e atualizado 19/04/2022. Disponível em: https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/p/praticas-integrativas-e-complementares-pics-1. Acesso em: 21 set. 2022.

BRASIL. Ministério da Saúde. Biblioteca Virtual da Saúde. 71% dos Brasileiros têm os Serviços Públicos de Saúde como Referência. Fonte: Patrícia de Paula, 2014. Disponível em: https://bvsms.saude.gov.br/71-dos-brasileiros-tem-os-servicos-publicos-de-saude-como-referencia/. Acesso em: 10 nov. 2022.

BRASIL. Ministério da Saúde. Fundação Oswaldo Cruz - FIOCRUZ. Agrotóxico e Saúde Volume 2 - Coleção Saúde, Ambiente e Sustentabilidade. Organizado: Vice-Presidência de Ambiente, Atenção e Promoção da Saúde. Série FIOCRUZ - Documentos Institucionais Rio de Janeiro, 2018. Acesso em: 12 nov. 2022.

BRASIL. Tribunal Regional Federal da 4ª Região. Apelação cível nº 5024843-04.2019.4.04.9999/SC. Originário nº 03003599420178240046 (SC) Apelante: Elena Lugaresi da Rosa. Apelado: Os Mesmos. Relator: Paulo Afonso Brum Vaz - 9ª Turma. Data de autuação: 14/10/2019. Tribunal Regional Federal, Florianópolis SC, 30/04/20 nº Transitado Julgado - Data: 29/04/2021. Disponível em:

https://consulta.trf4.jus.br/trf4/controlador.php?acao=consulta_processual_resultado_pesquisa&selForma=NU&txtValor=5024843-04.2019.4.04.9999&chkMostrarBaixados=S&todasfases=&todosvalores=&todaspartes=&txtDataFase=01/01/1970&selOrigem=TRF&sistema=&txtChave= . Acesso em: 11 out. 2022.

BROERINGMEYER, Richard. Principios de la Terapia Magnetica/Bio-magnetismo. Health Industries, Inc. 1991.

CARNEIRO, A. A. O.; FERREIRA, A.; MORAES, E. R.; ARAUJO, D. B.; SOSA, Z, M. e BAFFA, O. Biomagnetismo: Aspectos Instrumentais e Aplicações. Revista Brasileira de Ensino de Física - Ribeirão Preto – São Paulo: v. 22, nº 3, set. 2000.

CARRERO, Denise; PEREIRA, Murillo. Semiologia na Prática Clínica Nutricional. ed. Padrão, 2020.

CASTEJÓN, Enrique de Juan González de. Efeitos Biológicos do Par Biomagnético sobre la Excitabilidad Neuromuscular, 2015. Tese (Doutorado) - Programa de Doutorado em Medicina, Universidade de Alcalá, Alcalá de Henares, 2015.

CHEN, Yixia; LIN, Mingwei; ZHUANG, Dan. Wastewater treatment and emerging contaminants: bibliometric analysis. Chemosphere, v. 297, p. 133932, jun. 2022. Elsevier BV. http://dx.doi.org/10.1016/j.chemosphere.2022.133932. Disponível em: https://pubmed.ncbi.nlm.nih.gov/35149018/. Acesso em: 10 out. 2022.

COSTA, Vanessa Indio do Brasil da; MELLO, Márcia Sarpa de Campos de; FRIEDRICH, Karen. Exposição ambiental e ocupacional a agrotóxicos e o linfoma não Hodgkin. Saúde em Debate, v. 41, n. 112, p. 49-62, mar. 2017. FapUNIFESP (SCIELO). http://dx.doi.org/10.1590/0103-1104201711205. Disponível em: https://doi.org/10.1590/0103-1104201711205. Acesso em: 10 nov. 2022.

GHEBREYESUS, Tedros Adhanom. Healthcare for all: every country can do it an essay by tedros adhanom ghebreyesus, p. 1, 02 dez. 2019. BMJ. http://dx.doi.org/10.1136/bmj.l6790. Disponível em: https://www.bmj.com/content/367/bmj.l6790. Acesso em: 23 set. 2022.

GOIZ DURÁN, Isaac. El Par Biomagnético. 5ª ed. Chapingo, México D. F.: Universidad Autónoma Chapingo, 2008.

GOIZ DURÁN, Isaac. Fisiopatología Bioenergética. México City, México: Medicinas Alternativas y Rehabilitación S. A., 2014.

GRANT, D. M.. Detoxification pathways in the liver. Journal Of Inherited Metabolic Disease, v. 14, n. 4, p. 421-430, jul. 1991. Wiley. http://dx.doi.org/10.1007/bf01797915. Disponível em: https://pubmed.ncbi.nlm.nih.gov/1749210/. Acesso em: 19 dez. 2022.

GRESNER, Peter; GROMADZINSKA, Jolanta; WASOWICZ, Wojciech. Polymorphism of selected enzymes involved in detoxification and biotransformation in relation to lung câncer, v. 57, n. 1, p. 1-25, jul. 2007. Elsevier BV. http://dx.doi.org/10.1016/j.lungcan.2007.02.002. Disponível

em: https://pubmed.ncbi.nlm.nih.gov/17337085/. Acesso em: 20 dez. 2022.

HALL, John E. Guyton & Hall - Tratado de Fisiologia Médica. 12ª ed. Elsevier Editora Ltda, 2011.

HYUN, Jeongeun; HAN, Jinsol; LEE, Chanbin; YOON, Myunghee; JUNG, Youngmi. Pathophysiological Aspects of Alcohol Metabolism in the Liver. International Journal Of Molecular Sciences, v. 22, n. 11, p. 5717, 27 maio 2021. MDPI AG. http://dx.doi.org/10.3390/ijms22115717. Disponível em: https://pubmed.ncbi.nlm.nih.gov/34071962/. Acesso em: 10 out. 2022.

HONG, Yu Ah; PARK, Cheol Whee. Catalytic Antioxidants in the Kidney. Antioxidants, v. 10, n. 1, p. 130, 18 jan. 2021. MDPI AG. http://dx.doi.org/10.3390/antiox10010130. Disponível em: https://pubmed.ncbi.nlm.nih.gov/33477607/. Acesso em: 16 dez. 2022.

IARC. International Agency for Research on Cancer. Evaluation of five organophosphate insecticides and herbicides, Monographs Volume 112: World Health Organization. Lyon, France 20, march, 2015. Disponível em: https://www.iarc.who.int/wp-content/uploads/2018/07/MonographVolume112-1.pdf. Acesso em: 10 nov. 2022.

IARC. International Agency for Research on Cancer. Monographs Volume 112: Evaluation of Five Organophosphate Insecticides and Herbicides. Ano: 2017. Disponível em: https://publications.iarc.fr/Book-And-Report-Series/Iarc-Monographs-On-The-Identification-Of-Carcinogenic-Hazards-To-Humans/

Some-Organophosphate-Insecticides-And-Herbicides-2017. Acesso em: 4 nov. 2022.

IARC. International Agency for Research on Cancer. Monographs Volume 113. DDT, Lindane, AND 2,4 D. Ano: 2018. Disponível em: file:///C:/Users/Usuario/Documents/Downloads/Vol113-book.pdf. Acesso em: 10 nov. 2022.

KLEIN, A. V.; KIAT, H.. Detox diets for toxin elimination and weight management: a critical review of the evidence. Journal Of Human Nutrition And Dietetics, v. 28, n. 6, p. 675-686, 18 dez. 2014. Wiley. http://dx.doi.org/10.1111/jhn.12286. Disponível em: https://pubmed.ncbi.nlm.nih.gov/25522674/. Acesso em: 25 set. 2022.

KOEPPEN, B. M.; STATON, B. A. Berne e Levi Fisiologia, 6ª ed. Rio de Janeiro: Elsevier Editora Ltda, 2009.

KREWSKI, Daniel; A YOKEL, Robert; NIEBOER, Evert; BORCHELT, David; COHEN, Joshua; HARRY, Jean; KACEW, Sam; LINDSAY, Joan; MAHFOUZ, Amal M; RONDEAU, Virginie. Human Health Risk Assessment for Aluminium, Aluminium Oxide, and Aluminium Hydroxide. Journal Of Toxicology And Environmental Health, Part B, v. 10, n. 1, p. 1-269, 16 nov. 2007. Informa UK Limited. http://dx.doi.org/10.1080/10937400701597766. Disponível em: https://pubmed.ncbi.nlm.nih.gov/18085482/. Acesso em: 01 mar. 2022.

LEUNG, Po Sing. Physiology of the Pancreas. Advances In Experimental Medicine And Biology. p. 13-27, 2010. Sprin-

ger Netherlands. http://dx.doi.org/10.1007/978-90-481-9060-7_2. Disponível em: https://pubmed.ncbi.nlm.nih.gov/32304069/. Acesso em: 20 dez. 2022.

LI, Baoman; XIA, Maosheng; ZOREC, Robert; PARPURA, Vladimir; VERKHRATSKY, Alexei. Astrocytes in heavy metal neurotoxicity and neurodegeneration. Brain Research, v. 1752, p. 147234, fev. 2021. Elsevier BV. http://dx.doi.org/10.1016/j.brainres.2020.147234. Disponível em: https://pubmed.ncbi.nlm.nih.gov/33412145/. Acesso em: 02 ago. 2021.

MADELEINE, Forro Barnothy, Doutora em Física, no prefácio do seu livro "Biological Effects of Magnetic Fields"- v.1, 1964.

MADOÑERO DE LA CAL, A. Uso Terapêutico de Campos Magnéticos. I: Fundamentos do Biomagnetismo. Ano 2004.

MARKOV, Marko. S. Electromagnetic Fields and Life. Journal of Electrical & Electronic Systems. 2013, Editosa: Springer Science+Business Media Nova York. Doi: https://doi.org/10.1007/978-1-4757-0635-2.

MARTINÉZ, David G. Manual Del Biomagnetista – Out. 2018.

MARTINÉZ, David G. Guia de Pares Biomagnéticos - 1º nível, 2019a.

MARTINÉZ, David G. Guia de Pares Biomagnéticos - 2º nível, 2019b.

MARTINÉZ, David G. Programa de Terapias, Cursos e Práticas - 2021.

MASA, Justus; BARWE, Stefan; ANDRONESCU, Corina;

SCHUHMANN, Wolfgang. On the Theory of Electrolytic Dissociation, the Greenhouse Effect, and Activation Energy in (Electro)Catalysis: a tribute to svante augustus arrhenius. Chemistry – A European Journal, v. 25, n. 1, p. 158-166, 20 dez. 2018. Wiley. http://dx.doi.org/10.1002/chem.201805264. Disponível em: https://pubmed.ncbi.nlm.nih.gov/30460721/. Acesso em: 01 nov. 2022.

OGA, Seizi; CAMARGO; Márcia de Almeida e BATISTUZZO José Antonio de Oliveira. Fundamentos de Toxicologia. Editora Atheneu. 3ª Ed. 2008.

PEREZ, Assumpção, Ísis. O Efeito da Exposição de Campos Magnéticos estáticos sobre fibroblastos em cultura, 2022. Dissertação (Mestrado) Programa de Pós Graduação Multidisciplinar em Física Aplicada, da Universidade Federal do Rio de Janeiro como parte dos pré requisitos necessários para a obtenção do título Mestre em Física Aplicada, 2022.

PÉREZ MARTÍNEZ, Graciela. Biomagnética: Campos magnéticos: Fuente de la vida. Editora Editorial Kier España S.L.; 1ª edição, 20 setembro 2018.

PERSON, Ivan. Biomagnetismo Avançado e Bioenergia Aplicada. 1ª ed. Campinas - São Paulo p. 67, 2018.

PHILPOTT, Willian H; KALITA, Dwight K. e LOTHROP, Linwood. Magnet Therapy, Second Edition: The Self-Help Guide to Magnets-Clinically Proven to Relieve 35 Health Problems. 2015. Editora: ‍ Square One Publishers.

magnetismo. v.3 nº61874, 1990.

ROSEN, Arthur D. Effect of a 125 mT static magnetic field on the kinetics of voltage activated Na+ channels in GH3 cells. Bioelectromagnetics, v. 24, n. 7, p. 517-523, 27 ago. 2003. Wiley. http://dx.doi.org/10.1002/bem.10124. Disponível em: https://pubmed.ncbi.nlm.nih.gov/12955757/. Acesso em: 17 jun. 2022.

ROAN, José V. Centro de Informação e Assistência Toxicológica (CIATOX-Campinas Faculdade de Ciências Médicas UNICAMP. Relatório de Atendimentos 2018. Disponível em: https://www.fcm.unicamp.br/fcm/sites/default/files/2020/page/relatorio_de_atendimentos_ciatox_2018_09jul2020.pdfA c e s s o em: 09 set. 2022.

DAVIS, Alberto Roy e RAWLS, Walter. La Anatomia del Bio-

SERVADIO, Joseph L.; DEERE, Jessica R.; JANKOWSKI, Mark D.; FERREY, Mark; ISAAC, E.J.; CHENAUX-IBRAHIM, Yvette; PRIMUS, Alexander; CONVERTINO, Matteo; PHELPS, Nicholas B.D.; TRAVIS, Dominic A.; MOORE, Seth; WOLF, Tiffany M.. Anthropogenic factors associated with contaminants of emerging concern detected in inland Minnesota lakes (Phase II). Science Of The Total Environment, v. 772, p. 146188, jun. 2021. Elsevier BV. http://dx.doi.org/10.1016/j.scitotenv.2021.146188. Disponível em: https://pubmed.ncbi.nlm.nih.gov/33715861/. Acesso em: 11 out. 2022.

SCHRAUFNAGEL, Dean E.; BALMES, John R.; MATTEIS, Sara de; HOFFMAN, Barbara; KIM, Woo Jin; PEREZ-PA-

DILLA, Rogelio; RICE, Mary; SOOD, Akshay; VANKER, Aneesa; WUEBBLES, Donald J. Health Benefits of Air Pollution Reduction. Annals Of The American Thoracic Society, v. 16, n. 12, p. 1478-1487, dez. 2019. American Thoracic Society. http://dx.doi.org/10.1513/annalsats.201907-538cme. Disponível em: https://pubmed.ncbi.nlm.nih.gov/31774324. Acesso em: 22 set. 2022.

SILVERTHORN, Dee Unglaub; RIBEIRO, Maria Flávia Marques; KRAUSE, Mauricio da Silva e SCHENKEL, Paulo Cavalheiro. Fisiologia Humana: Uma Abordagem Integrada. 7ª ed. São Paulo: Editora Artmed, 2017.

SU, Wen; CAO, Rong; ZHANG, Xiao-Yan; GUAN, Youfei. Aquaporins in the kidney: physiology and pathophysiology. American Journal Of Physiology-Renal Physiology, v. 318, n. 1, 1 jan. 2020. American Physiological Society. http://dx.doi.org/10.1152/ajprenal.00304.2019. Disponível em: https://pubmed.ncbi.nlm.nih.gov/31682170/. Acesso em: 19 dez. 2022.

YADAV, Deepak; RANGABHASHIYAM, S.; VERMA, Pramit; SINGH, Pardeep; DEVI, Pooja; KUMAR, Pradeep; HUSSAIN, Chaudhery Mustansar; GAURAV, Gajendra Kumar; KUMAR, Kuppusamy Sathish. Environmental and health impacts of contaminants of emerging concerns: recent treatment challenges and approaches. Chemosphere, v. 272, p. 129492, jun. 2021. Elsevier BV. http://dx.doi.org/10.1016/j.chemosphere.2020.129492. Disponível em: https://pubmed.ncbi.nlm.nih.gov/35534951/. Acesso em: 10

ISSN: 2763-5724

Vol. 03 - n 02 - ano 2023

Editora Acadêmica Periodicojs

out. 2022.