

NATURAL MEDICINAL RESOURCES

"We forget that the water cycle and the life cycle are one"
- Jacques Yves Cousteau

What are natural resources? Natural resources are natural components of living and inanimate nature, the human environment, which he uses or can use to meet the needs of society. They include the Sun's energy and the Earth's depths, minerals (oil, metals, peat), air, climate, water, soil, herbals, forests, wildlife, and landscape. In the early period of human activity, natural resources were the most important. The whole planet receives the Sun's energy and the Earth's depths, but only a small part of it can be directly used by man. Some natural resources are inexhaustible (Solar and wind energy, precipitation), others are exhaustible or limited (minerals). Depleting natural resources are divided into renewable (plant, animal, soil resources) and non-renewable (oil, natural gas, coal). Biological resources regenerate themselves or they can be regenerated through the deliberate development of forestry, fishing, agriculture, and hunting, creating artificial conditions for swamp formation processes. The use of resources changes not only the directly used elements of nature, but also other elements related to them. Therefore, it is encouraged to use natural resources in a complex manner, assess the impact on other natural elements, reduce harmful effects on the environment, and pollution, save resources, replace deficit resources with artificial substitutes, and use secondary raw materials and waste. (Universal Lithuanian Encyclopedia, Wikipedia).

According to the Lithuanian Geological Service, we have 17 types of minerals in the country. Of these, 9 types of resources are used: oil, limestone, dolomite, chalk marl, sand, gravel, clay, peat, and sapropel. From solid minerals, we mainly extract gravel and sand, peat, dolomite, limestone, and clay. They and underground water are the most used resources in Lithuania and the world. Minerals are naturally occurring minerals with specific chemical and physical properties. They were formed during geological processes at all stages of the Earth's history and are found in the Earth's crust. About 45 billion tons of natural resources are consumed worldwide each year. On average, each person consumes about 16 tons of all types of minerals per year. (EuroGeoSurveys, „Minerals in Your life“).

How can natural resources be used for prevention and treatment? Natural medicinal waters, gases, and peloids can be used in different ways by internal and external application. The patients may either drink natural medicinal waters (crenotherapy); bath in natural medicinal water (hydrotherapy), peloids or gases; inhale natural gases; or have some peloid packs or tampons with peloids (Gutenbrunner, 2010). Balneotherapy (lat. *balneum* - bath + gr. *therapeia* - treatment, nursing) - medical treatment with mineral water and its use for preventive purposes. Balneology, also called Medical Hydrology, is a field of science that studies the methods, applications, and effects of balneotherapy with healing mineral water (baths, drinking, and inhalations), mud, and gases to achieve therapeutic goals. It covers various disciplines: medicine, public health, hydrology, hydrogeology, hydrochemistry, physics, microbiology, physiology, physiotherapy, toxicology, epidemiology, health tourism, etc. (Gomes CSF, 2013). The term "natural mineral water" is suitable for both natural springs and other underground continental waters with stable specific physical and chemical

properties; when, depending on the origin, composition, and temperature of the minerals, its healing properties are medically recognized, natural mineral water is called healing mineral water. Geothermal (geo + gr. therme) water - related to the thermal processes of the Earth's depths, it is underground water that is released at a higher temperature due to the heat provided by hot rocks. Due to the high temperature and high mineralization, geothermal water serves people on the farm and for strengthening health during balneotherapy procedures. Balneotherapy procedures have a combined effect on the human body: thermal, mechanical, chemical, immunological, and psychological (Kardes & Karagulle, 2020; Rapolienė & Jurgelėnas, 2014).

In many European countries, hydrotherapy is widely used, it is included in the National Health Systems, in other countries it is distinguished as a type of complementary medicine or does not belong to either traditional or complementary medicine, it is used only in the field of wellness; in Japan, South Korea, Vietnam, China, hydrotherapy is a traditional method of treatment. Balneotherapy is combined with hydrotherapy, electrotherapy, mud therapy, physical exercises, massage, underwater massage, diet, etc. It is known that Beethoven, Grieg, Bach, Chopin, Brahms, Liszt, Dumas, Wagner, Tchaikovsky, Paganini, Peter the Great, Bismarck, Maria Theresa, Goethe, Queen of England Elizabeth I, and other famous people were treated in the famous thermal spas of Karlovy Vary (Lund, 2000).

Peloids are substances (peat, sapropel, clay, etc.) formed during natural geological processes, characterized by specific physical, chemical, and biologically active properties and a complex spectrum of pharmacological effects, used in medical rehabilitation and/or other wellness activities. Structurally, peloids consist of three complexes: • The first is the liquid phase of peat, consisting of water, dissolved mineral substances (sodium, potassium, calcium, magnesium, divalent and trivalent iron cations, chlorine, sulfate, hydrocarbon anions), trace elements (copper, manganese, strontium, etc.), organic substances (amino, fulvic acids, phenols, vitamins, enzymes, hormones) and gases. It is the most therapeutically active part of the peat. • The second is the crystalline skeleton: salt crystals, gypsum pieces, shell particles, remains of plant and animal origin, etc. It ensures the consistency of the peloid and helps maintain the shape of the application. • The third is a colloidal complex. It is dominated by organic substances (humus, bitumens, waxes, cellulose, lignin, and other soluble and easily hydrolyzed substances).

There are 4,000 lakes in Lithuania, whose valuable products are peat, silt, and sapropel; there are several peat bogs whose peat is used to provide health treatments. Peat baths were already used in Ancient Greece; used for more than 200 years in Europe, mostly for the treatment of arthritis and gynecological diseases. Natural sapropel applications have been used to preserve youth since Antiquity. Mud therapy is popular in Turkey, as it is in France, Germany, Italy, and Eastern Europe; it is mostly used for the treatment of diseases of the musculoskeletal system and gives positive pain-relieving results.

Natural medicinal resources are a country's natural wealth. Natural medicinal waters, medicinal gases, and peloids have many properties that enable their use in the treatment of gastrointestinal, circulatory, respiratory, bone and joint, and skin and soft tissue disorders. Balneotherapy can be also applicable in the prevention of many diseases and rehabilitation. There is a lot of scientific data that being in nature, applying balneotherapy procedures can improve a person's psychological condition, reduce fatigue and other health problems, and have a positive effect on the treatment of nervous, bone-muscular, cardiovascular, respiratory, and other diseases, restore health after illness or injury, and reduce stress. Thus, complexes of various spa treatments using natural resources, such as mineral or geothermal water, healing mud, sun, air, forest, and landscape, could help restore or improve people's physical and mental health. What we need is to use what we have!