

## Freshwater Source of Sapropel for Healthcare

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**Abstract :** Freshwater sapropel is a common material formed by complex biological transformations of Holocene sediments in the water basement of the lakes in Latvia that has the potential to be used as medical mud. Sapropel forms over a long period in shallow waters by slowly decomposing organic sediment and has different compositions depending on the location of the source, surroundings, the water regime, etc. Official geological survey of Latvia lakes, from Latvian lake database (ezeri.lv), used in the selection of the area of the exploration. The multifunctional effect of sapropel on the whole organism explained by its complex chemical and biological structure. This unique, organic substance and its ability to maintain heat for a long time ensures deep tissue warming and has a positive effect on the treatment of various joint and skin diseases. Sapropel is a valuable resource with multiple areas of application. Investigation of sapropel sediments and survey of the five sites selected according to the criteria performed in the current study. Also, our study includes sampling at different depths and their initial treatment, evaluation of external signs, and study of physical-chemical parameters, as well as analysis of biochemical parameters and evaluation of microbiological indicators. The main selection criteria were sapropel deposits depth, hydrological regime, the history of agriculture next to the lake, and the potential exposure to industrial waste. One hundred and five sapropel samples obtained from five lakes (Audzeli, Dunakla, Ivusku, Zieļu, and Mazārs Kivdaloja) during the wintertime. The main goal of the study is to carry out detailed and systematic research on the medical properties of sapropel to be obtained in Latvia, to promote its scientifically based use in balneology, to develop new medical procedures and services, and to promote the development of new exportable products. Latvian freshwater sapropel could be used as raw material for getting sapropel extract and use it as a remedy. All mentioned above brings us to the main question for sapropel usage in medicine, balneology, and pharmacy "how to develop quality criteria for raw sapropel and its extracts. The research was co-financed by the project "Analysis of characteristics of medical sapropel and its usage for medical purposes and elaboration of industrial extraction methods" No.1.1.1.1/16/A/165.

**Keywords :** balneology, extracts, freshwater sapropel, Latvian lakes, medical mud, sapropel

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