

MAIN TYPES OF MEDICAL CLAYS OF TAMBOV REGION

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¹Parfenov A.A., ¹Datiy A.V., ¹Makarova E.V., ¹Marchenkova L.A., ²Zaborova V.A.

¹National Medical Research Center of Rehabilitation and Balneology of the Ministry of Healthcare of the Russian Federation, Moscow, Russia

²I.M. Sechenov First Moscow State Medical University of the Ministry of Health of the Russian Federation (Sechenov University), Moscow, Russia

ОСНОВНЫЕ ТИПЫ ЛЕЧЕБНЫХ ГРЯЗЕЙ ТАМБОВСКОЙ ОБЛАСТИ

¹Парфенов А.А., ¹Датий А.В., ¹Макарова Е.В., ¹Марченкова Л.А., ²Заборова В.А.

¹Национальный медицинский исследовательский центр реабилитации и курортологии Минздрава России, Москва, Россия.

²Первый Московский государственный медицинский университет им. И.М. Сеченова Минздрава России (Сеченовский Университет), Москва, Россия

Huge medical clays deposits are lying on the territory of Tambov region of Russian Federation. They are represented by peat sediments in the bogs and sapropel sediments in the lakes. Both of these clays are divided into low-ash, medium-ash and high-ash according to mineral-organic ration.

Peat clay. Peat is a common mineral in Tambov region. The region is a part of bogland district of Oksko-Donskaya lowland. Quantitatively small peat deposits prevail in this area, but the main volume of peat sediments are found in medium and large peatlands.

In this region such types of peat bogs are found like: valley, floodplain sphagnum bogs, terraced and less often – watershed. This bogs are lying on sandy soils among pine forests and pine-deciduous forests in the basins of river Voronezh, Moksha and some other rivers. These floodplain peatlands usually belongs to transitional type and only occasionally to the raised type. The average size of a peatland in this region is at least 10 hectares.

The peat sediments of Inzhavinsky district are of considerable interest. They are close enough to Lake Ilmen, that has sapropelic mud sediments and could be mined by the same organization. Peatlands are located in the floodplain of Voronezh river at the first floodplain terrace, they are of valley type and occupies areas from 3 to 30 hectares.

Healing mud. “Klukvenoye” peatland is located in Inzhavinsky district, 1 km from the village Krasivka, in the floodplain of river Vorona. The surface of the peatland is humid, woody and mossy tiers are absent, grass cover is thick. Some parts of area are covered with willow up to 1.5–2.0 m in height, with a trunk of 1–3 cm in diameter. The mineral bottom of sediment is composed of blue loam.

In 1948, on the basis of this peat bog, Krasivenskoyel Peat Enterprise has been organized. At present, most of the peatlands are presented by abandoned floded quarry. The area of peatland extends to 111.5 hectares, including the area of industrial deposits in balance contours of 92.1 hectares.

The average sediments thickness is 0.8 m and the maximum one is 1.9 m. Undeveloped reserves of the peatland are about 450 thousand m³. Under the lay of sedge peat, an interlayer of sapropel is found of 0.2–0.4 m thickness. Peat humidity is 88%, its decomposition degree is 60–83% (69% average). Ash content of 20–32%, average 25.6%. Humidity of underlying layer of sapropel is 49.6–91.7% (76.8% average); the ash content is 11.3–88.4% (38.6% average). The peatland is annually flooded for 15–20 days with the waters of river Vorona. This is not a significant obstacle for the peat extraction for therapeutic purposes, since the consumed peloid amount does not exceed 1.5–2.0 m³, even taking into account the possibility of neighboring areas supplement.

The Lake Ilmen sapropel sediments are located in Inzhavinsky district, 5 km southward from the district center, village of Inzhavino, that is 1.5 km to the northeast of Krashivka village. The lake is freshwater, drainless, shallow eutrophic reservoir, fed by the spring floods, atmospheric precipitation, thawed and ground waters. The depth of the lake at low-water is 0.9–1.1 m, some years up to 0.5–0.6 m, the area is 1.46 km², the degree of reedmace overgrowing is 22%. Mineralisation of lake water is 0.4–0.6 g/l. The flora and fauna of the lake are characterized by great diversity, high biomass (thickness of reedmace up to 6.5 kg/m², underwater meadows up to 6.3 kg/m², zooplankton up to 10 g/m³, zoobenthos up to 46 g/m²) these factors leads to intensive process of sapropel formation in the lake.

Sanitary characteristics of the lake are satisfactory. It is pure on physical, chemical, bacteriological and biological parameters is pure and meets criterias of β -mesosaprobic zone. In its coastal area, where thickets of reedmace is higher, main parameters are significantly lower, criterias meets α -mesosaprobic zone. The alkaline pH shift of the water is caused by the photosynthesis of hydrobionts, and permanganate oxidation of water is caused by hydrobionts destruction.

Medical clays of the lake is represented by high-ash calcareous zoogenic-algal and high-ash clayish sapropel.

The main parameters of calcareous sapropel are following: humidity is 75–86%, volume weight is 1.04–1.14 g/cm³, content of impurities is 0.4–2.0%, ash content is 54–75%, carbonates content is 21–47%, extraction mineralization is 0.4–0.8 g/l. The analogue is the sapropel of Lake Molotaevo ("Samotsvet" sanatorium).

The main parameters of clayish sapropel are following: humidity is 49–57%, volume weight is 1.26–1.33 g/cm³, content of impurities is 0.3–1.0%, ash content is 81–84%, carbonates content is 13–22%, extraction mineralization is 0.4 – 0.8 g/l. The analogue is the lake Chutchye sapropel (sanatorium "Talaya").

The organic matter of lake Ilmen sapropel is represented mainly by gumin part (35%) and insoluble part (27%). Sapropel contains such microelements as: manganese, copper,

chrome, such vitamins as riboflavin, and such pigments as carotene.

The sapropel sediment is a bilayer: at the depth of 0.0–1.5 m it is represented by calcareous sapropel, and at the depth of 1.5–2.2 m by clayish sapropel. Underlying rocks are represented by clayey muds, and along the western shore – by thick fine-grained sand.

The geological reserves of sapropel reaches 2.57 million m³. Balance reserves are 2.1 million m³, including 1.6 million m³ of calcareous sapropel and 0.46 million m³ of clayish sapropel.

Specific characteristics of the clays determines mechanisms of their therapeutic effects (anti-inflammatory, analgesic, spasmolytic, blood circulation improvement). That's why they are usually recommended for the patients with musculoskeletal pathology, problems with skin, nervous, urogenital, gastrointestinal systems, cardiovascular and respiratory diseases.

Контакты:

Datiy Alexey. E-mail: 4590056av@mail.ru