

Chemical and Radiological Composition of Peruíbe Black Mud Cosmetics

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About 150 applications are known for clay and clay minerals, among them oil and water adsorbent, catalyzer, bactericide, ceramics, beverage whitening, filters production, porcelain, waste treatment, cosmetics, and so on. In the pharmaceutical industry, clays are used as excipients, lubricants, diluents, binders, desiccants, emulsifiers, thickeners, masking flavors, isotonic agents and chargers of active substances.

The use of minerals for therapeutic purposes is an ancient practice, especially clay minerals such as smectite, kaolinite and palygorskita. The clays were used in wound healing, skin irritation relief, skin cleaning and also for anti-inflammatory purposes. In cosmetic, the topical application is recommended due to the clay ability to adsorb substances such as fats and toxins.

In Brazil, an example is the Peruibe Black Mud of São Paulo State. This material is characterized by large amounts of fine particles, high organic matter content, high sulfate reducing bacteria content and consequently high reduction potential. The Peruíbe Black Mud is commonly used to treat psoriasis, dermatitis peripheral acne and seborrhea, in addition to its use in myalgia, arthritis and rheumatic diseases such as arthrosis and rheumatism sciatic. This mud also has application in healing skin disorders, allergies and chronic eczema.

This study aimed to evaluate the elementary composition (As, Ba, Br, Cs, Co, Cr, Fe, Hf, Na, Rb, Sb, Sc, Se, Ta, Th, U, Zn, Zr, Sc, Ce, Eu, La, Lu, Nd, Sm, Tb and Yb, by neutron activation analysis, Pb, Cd and Hg, by atomic absorption spectrometry) and activity concentration of radioactive nuclides (^{226}Ra , ^{228}Ra , ^{210}Pb and ^{40}K) in the Peruíbe Black Mud and in cosmetics made with it: conditioner, moisturizer, soap, liquid soap, shampoo, facial mask and sterilized mud.

For the radionuclides analysis, the results showed that only the face mask cosmetic and sterilized mud possess measurable activity concentration. In all the other cases, the activity concentration was below the detection limit. Elementary concentrations indicate that the face mask and the sterilized mud are also the type of cosmetic with closer values to the mud. Liquid soap and shampoo were the cosmetics with the lowest values compared to the mud.