

## **EFFICACY OF EXFOLIANT FORMULATIONS CONTAINING BIOGENIC CARBONATE SAND FROM PORTO SANTO ISLAND, MADEIRA ARCHIPELAGO**

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Particular types of sand are used worldwide in therapeutic applications. Biogenic carbonate sand of the island of Porto Santo, in Madeira archipelago has been used over the years by man in the form of sand-baths. According to medical reports and public recognition, it have been used locally for many years with apparent success for the treatment of osteo-articular and muscular diseases. Exfoliation is a procedure that aims to accelerate the cutaneous process of cellular renovation by the use of keratolytic substances. This is a way in which the skin acquires a more youthful and renewed aspect. In this study hydrogels with exfoliant properties, containing biogenic carbonate sand were developed. Several granulometric fractions of sand were used in products for application as exfoliants in face, body and feet, respectively. Biogenic carbonate sand of Porto Santo shows platy shape and low hardness (3 in the Mohs' scale) but still high enough to be able to act as effective exfoliating agent. Viscosity of prepared gels was evaluated at 20°C with a rotation viscosimeter. Texture analyses were performed using a Texturometer and the maximum force (firmness) and the negative area (adhesiveness) were calculated. In order to test their exfoliant efficacy, gels were also applied on the skin of several human volunteers, and skin microrelief parameters were evaluated using non-invasive biometric techniques. All the prepared gels presented refluidificant behaviour without tixotropy. Viscosity increased with the increase in the size of sand particles incorporated in the gels. They also showed appropriate firmness and adhesiveness properties convenient for topical application and exfoliation, causing an improvement of skin appearance. Gels containing Porto Santo sand showed suitable consistency and good exfoliant properties. Depending on the granulometry of the incorporated sand, it is possible to obtain products able to produce exfoliation in different anatomic regions of skin as demonstrated by biometric measurements.

Keywords: biogenic carbonate sand, exfoliant, efficacy