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Characterization of karak clay from pakistan for pharmaceutical and cosmetic applications

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Clay, the most important, plentiful, and low cost naturally occurring mineral, is widely used in variety of industrial application including Pharmaceutical and cosmetic. Clay is the fine grained aluminosilicate mineral which shows the property of plasticity at appropriate water content, and becomes hard upon drying. In Pakistan there are different types of clay but till now neither of them properly identified nor characterize for specific industrial application. The objective of this work is to characterize Karak clay for pharmaceutical and cosmetic applications collected from deposit located at Shagai region, District Karak, Pakistan. The clay was characterized through X-ray diffractometry (XRD), X-ray Fluorescence (XRF), trace elemental Analysis, Microbiological analysis, Cation exchange capacity (CEC), pH and swelling assays according to European, United States of America and Brazilian Pharmacopeias. Bulk Chemical analysis shows that the Aluminum oxide and silica oxide are present in large quantity which was confirmed by XRD that this sample has montmorillonite as a major while illite and kaolinite as minor clay minerals. Quartz of small quantity was also found as a non-clay mineral. After analyzing the results for sample it was concluded that the clay is a strong candidate for cosmetic purposes.