

ARTIGO REF: 6681

ON THE CHEMICAL AND MICROBIOLOGICAL SANITARY SAFETY OF EDIBLE CLAYS

Celso Figueiredo Gomes^(*), Jorge Hamilton Gomes, João Baptista Silva

University of Aveiro, Depart. Department of Geosciences (GeoBioTec), Aveiro, Portugal

^(*)Email: cgomes@ua.pt

ABSTRACT

Healing clay or *curative clay* has been traditionally used by man, both orally for therapeutic or nutritional purposes, and topically for therapeutic or cosmetic purposes.

However, the frequent use of *healing clay* could impart some important health and skin care benefits and risks (Gomes, 2017).

Through ingestion clay particles could adsorb and make available, either for absorption and incorporation of bio-essential elements, or for elimination by excretion of any potential toxic elements or toxins being ingested or produced during digestion, and within the toxic elements heavy metals deserve to be enhanced.

Edible clay, a particular type of *healing clay*, has been traditionally used by man for nutritional and therapeutic purposes. The use of *edible clay* is a common practice in the so-called *geophagy*, the deliberate clay-eating, clay soil-eating, earth-eating, and pica (medical condition or eating disorder shown by individuals addicted to eat earth substances), that has been observed in all parts of the world since Antiquity, reflecting cultural practice, religious belief, and physiological needs, be they nutritional (dietary supplementation) or as a remedy for disease.

The habit of eating clay or clay soil, especially among pregnant women, is still a common practice in many countries of Africa (Mozambique included), America and Asia, and could be performed as previously prepared cookies sucked or crunched, as lumps crunched, or yet as beverage of clay water dispersion (*argillic water*). In Africa Tanzania, Nigeria, Guinea, Senegal, Cape Verde, Ivory Coast, Zambia, Ghana, Kenya, Swaziland, Mozambique and South Africa are some countries where eating clay is a current practice.

Clay or clay soil eating could provide, either benefits (antacid, gastrointestinal protector, anti-diarrhoea, laxative, homeostatic, emetic, and anti-anemic), or risks (heavy metals poisoning, bowels blockage, and microbial contamination) to human health. In regard to the health benefits attributed to *edible clays* the following should be enhanced: source of mineral micronutrients, protective material against pathogens and toxins (detoxification of noxious or unpalatable compounds present in diet), and antacid for gastric acidity compensation.

In regard to the health benefits and risks attributed to *edible clays* a significant number of studies can be found in the literature.

Much has been investigated about the physical, physicochemical and chemical properties of *edible clays*, but little is still known about their real health effects and consequences.

Clays such as those named kaolin, bentonite, palygorskite, sepiolite and talc are reported in Pharmacopoeias and commercialized in Pharmacies. Being considered medicines such clays

could participate in pharmaceutical formulations as active substances and/or as excipients (inert fillers or diluents, as a rule). Hence the sanitary control and safety, both chemical (particularly of heavy metals) and microbiological (particularly of pathogenic microorganisms) of *edible clays* traded through well identified and registered dealers, needs to be monitored and regularized to ensure compliance with general medical and pharmaceutical legal regulations in force. On this subject no specific legislation exists for *edible clays*, products that could be included into the concept of *ethnopharmaceutics* (Heinrich and Pieroni, 2011), and as so their compliance with the guidelines proposed in pharmacopoeias (EP 7.0, 2011; USP 36-NF 31, 2013) should be taken into account.

The international trade of *edible clays* could be well limited to very few duly certified pharmaceutical enterprises, able to guarantee their chemical and microbiological safety.

In general and in what *edible clays* are concerned they do not undergo any chemical and microbiological control. Several examples disclosed in specialized literature point out to the health risks attributed to *edible clays*, particularly to those sold in open markets. Health risks might come also from the water, not always chemically and/or microbiologically potable, used to prepare the “*argillic water*” beverage.

REFERENCES

- [1]-European Pharmacopoeia (7th edition) (2011), Directorate for the Quality of Medicines of the Council of Europe, Strasbourg, France.
- [2]-Gomes, C., Healing and edible clays: A review of basic concepts, benefits and risks, Environmental Geochemistry and Health, 2017 (*In press*).
- [3]-Heinrich, M. & Pieroni, A., Ethnopharmakologie der Albaner Südtaliens, Zeitschrift Fürphytotherapie, 22 (2001), 236-240.
- [4]-United States Pharmacopoeia 36-NF31 (2013), United States Pharmacopoeia 36 and National Formulary 31, US Pharmacopoeial Convention Rockville, MD (USA).