Potential toxicity caused by heavy metals existing in muds and peloids to be used in mud therapy and peloid therapy

[a]Gomes J H C A, [a]Gomes C S F, [a]Almeida F E R, [a]Silva J B P, [a]Santos D

Special types of mud are topically applied for therapeutic and skin care purposes in some Health Resorts and spas. Mud application is called mud therapy. Mud properties and functions depend on their origin, occurrence and composition. According to their origin mud can be classified as volcanic mud, estuary or lagoon mud, sea mud, salt lake mud, saline mud, fresh water lake mud, river mud. The potential healing and cosmetic properties of natural mud, also called natural peloid, can be beneficiated through a more or less complex processing that includes refining, maturation (in natural mineral water, thermal or not thermal, or sea water), and incorporation of functional additives. The application for therapeutic or skin care purposes of the resulting product (called peloid) is called peloid therapy or pelotherapy (in short). In Europe no specific legislation and regulation exists about both maximum acceptable concentrations and toxicity concentrations of the potential toxic elements (Ba, As, Sb, Pb, U, Cd, Hg) and toxic/essential elements (Cr, Co, Cu, Ni, Zn, Se, Mo) that could exist in healing muds and peloids. So far, only the maximum acceptable concentrations and toxicity concentrations established for soils - the base of the food chain - can be used as guidelines for muds and peloids. In this case the pathway of toxic heavy metals is food ingestion. Toxic heavy metals could be incorporated too in case clay-based suspensions prepared with the so-called natural edible clays are ingested, practice current in several regions of the world.

On the other hand, the pathway of the incorporation in the human body of toxic heavy metals existing, both in muds and peloids applied for therapeutic and cosmetic purposes is dermal absorption.

This paper shows and discusses the results of toxic heavy metals determination carried out on mud samples collected in crystallization salt tanks from the Santiago salinas field, in Aveiro, Portugal. For comparative purposes data corresponding to toxic heavy metals contents determined by several authors in muds and natural peloids used for topical applications in several countries is shown.

[a] Research Centre GeoBioTec of FCT (Foundation for Science and Technology), Departamento de Geociências, Universidade de Aveiro, 3810-193 Aveiro (jhagomes@gmail.com)