Assessment of the Lake Gendabi salt for trace elements and toxic heavy metals by energy dispersive X-ray fluorescence spectrometry

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Abstract

This study has analyzed samples of salts from Lake Gendabi, located in the northern part of Tanzania for metal contamination using the EDXRF spectrometry. The aim of the study was to assess the suitability of the salt from Lake Gendabi for human consumption. Seventy-five samples of salt were collected from the Lake Gendabi floor and grouped into five grades (G1, G2, G3, G4 and G5) depending on the position of the salt from the lake shore. In addition to Na and Cl, concentrations of 17 more elements were determined in all five grades of salt. These included seven toxic metals which are Al, Ni, Cr, Cd, Pb as well as Th and U which are both toxic and radioactive. The concentrations of all toxic elements found in the samples were higher than their Maximum tolerable limits set by international organizations. As this salt is used in many parts of Tanzania, it is proposed that the salt should be thoroughly purified before entering the market. Further research to include salt samples from other salt production areas in Tanzania is recommended.

Keywords: Lake Gendabi Salt Toxic elements EDXRF