

Abstract

Heavy metals, in addition to being associated with the etiology of a number of diseases have been listed as non-tariff trade barrier to the tea trade. Therefore, accurate quantitation of levels of certain elements in tea is of great importance because of the associated health and economic implications. In this study, levels of Iron (Fe), Zinc (Zn), Copper (Cu), lead (Pb) and Cadmium (Cd) in tea grown and marketed in Kenya were quantified by Flame Atomic Absorption Spectroscopy (FAAS). In unprocessed tea, the levels were found to range between 54.6 and 123.3 $\mu\text{g/g}$ for Fe, 15.4 and 37.5 $\mu\text{g/g}$ for Zn, 10.3 and 14.8 $\mu\text{g/g}$ for Cu, 0.12 and 0.28 $\mu\text{g/g}$ for Pb and 10.0 and 27.1 $\mu\text{g/kg}$ for Cd whereas in black tea, the levels ranged between 81 and 369 $\mu\text{g/g}$ for Fe, 17.1 and 44.9 $\mu\text{g/g}$ for Zn, 9.0 and 17.8 $\mu\text{g/g}$ for Cu, 0.12 and 0.41 $\mu\text{g/g}$ for Pb and 9.1 and 40.0 $\mu\text{g/kg}$ for Cd. The general accumulation pattern of these elements was established to be $\text{Fe} > \text{Zn} > \text{Cu} > \text{Pb} > \text{Cd}$ in both unprocessed and black tea. All tea samples had metal contents within the Maximum Permissible Concentrations (MPC) set for tea, hence safe for consumption.