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Levels of selected heavy metals and risk assessment of selected tea products consumed in Saudi Arabia
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Abstract
Ingestion of natural food containing heavy metals is the most likely route of human exposure to the metals. Within the human body, heavy metals are deposited in bone and fat tissues, overlapping noble minerals can cause an array of diseases. Tea (camellia sinensis L) is among the most widely consumed nonalcoholic beverage. This study aimed to investigate and measure the concentrations of heavy metals and minerals in tea from 15 different brands consumed in Saudi Arabia to assess the health risk associated with its consumption and to compare the heavy metal contents with the permissible limits established by the USP and WHO. The mineral and metal contents (Fe, Cu, Zn, Pb, As, Cd) were analyzed using atomic absorption spectroscopy. The results revealed that the mean concentration were in the order: Mg> Fe> As> Cd> Zn> Pb. The average concentrations of Mg, Fe, Zn, As, Cd and Pb were 93.0, 6.14, 0.20, 1.75, 0.38 and 0.15 mg/kg, respectively Significant positive correlation (p > 0.5) were observed between pairs of Fe-Zn (0.617), Cd-Zn (0.596), Cd-As (0.595) and Zn-As (0.571). EDI values in black tea were higher than those in green tea, suggesting that black tea may pose a more serious health risk to humans than green tea. However, THQ values in green tea were all less than 1, indicating that the consumption of green tea would not result in any significant health risk of heavy metals for consumers. All the minerals and heavy metal were below the maximum permissible limits stipulated by the USP and WHO. © by PSP.

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