TOXICOLOGICAL RISK ORIGINATED FROM KITCHEN DISHES: CADMIUM AND LEAD

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Cadmium and lead compounds are often used as additions or as pigments in different ceramics and earthenware fabrication procedures. The accumulation of toxic metals such as lead and cadmium in human body can have middle-term and long-term health risks and adversely affect the physiological functions. As a result, FAO / WHO has laid down the dietary intake of lead and cadmium by adults, infants and children that the determined Provisional tolerable weekly intake of lead was 50 µg/kg for adults, 25 µg/kg for infants and children.

Although the researchers have generally worked on leaching of lead and other elements from glazed surfaces of historical kitchenwares (at least made before 1970), it is seen that the risk continues for the new kitchenwares, particularly for the 3rd world countries. In the literature, the authors have been generally focused on the acids such as acetic acid, citric acid and others to represent the acidic foods. It was observed that the risk is higher in case of acid plus NaCl (meal salt). This finding suggests that use of such dishes in kitchen could result in the ingestion of dangerously large amounts of lead and cadmium.

The permissible limits for the migration of lead and cadmium from kitchen dishes have been set by relevant authorities as 0.07 mg cadmium dm$^{-2}$ and 0.8 mg lead dm$^{-2}$ for flat receptacles, by using diluted acetic acid 4% (v/v).

In this study, it was found that 3-times higher Cd than the permissible level has migrated by using acetic acid (0.5%) plus NaCl (1.0%). Furthermore, higher concentrations about 3-times for Cd and 2-times for Pb by using citric acid, tartaric acid and lactic acid than by using acetic acid were migrated.