

Influence of Physico-chemical Factors on Leaching of Chemical Additives from Aluminium Foils used for Packaging of Food Materials

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In recent years, the use of aluminium foils to wrap foodstuff and commodities has been increased to a great extent. Aluminium was found to leach out from the foil in different simulants particularly in distilled water, acidic and alkaline medium at $60 \pm 2^\circ\text{C}$ for 2 hours and $40 \pm 2^\circ\text{C}$ for 24 hours. The migration was found to be above the permissible limit as laid down by WHO guidelines, that is of 0.2 mg/L of water. The protocol used for this study was based on the recommendation of Bureau of Indian Standard regarding the migration of chemical additives from packaging materials used to pack food items. Migration of the aluminium metal was found significantly higher in acidic and aqueous medium in comparison to alcoholic and saline medium. Higher temperature conditions also enhanced the rate of migration of aluminium in acidic and aqueous medium. Leaching of aluminium metal occurred in double distilled water, acetic acid 3%, normal saline and sodium carbonate, except ethanol 8%, in which aluminium migration was below the detection limit of the instrument where three brands of the aluminium foil samples studied.

Key words : *Leaching, additives, migration, foils*