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Aluminum and Human Health: Its Intake, Bioavailability and Neurotoxicity

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Abstract:
Aluminum is the most abundant metal in the earth's crust. However, it is not essential for life. Owing to its specific chemical properties, aluminum inhibits more than 200 biologically important functions and causes various adverse effects. It is suggested that the exposure to aluminum has a relationship with neurodegenerative diseases including dialysis encephalopathy, amyotrophic lateral sclerosis and Parkinsonism dementia in the Kii Peninsula and Guam, and Alzheimer's disease. However, these relationships still remain elusive. Furthermore, the complexity of bioavailability has difficulty in evaluation of aluminum toxicity. In this paper, we review the detailed characteristics of aluminum neurotoxicity and bioavailability based on the recent literatures, and discuss its biological fate and effects to human health. Considering its long half-life in the body, unnecessary exposure to aluminum should be avoided for human health.

Key words: bioavailability, gastrointestinal absorption, contamination, apoptosis

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