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Alzheimer's disease and trace elements

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It is well recognized that Alzheimer's disease is one of the main neurodegenerative diseases with which the aged people are afflicted. The FDA approved 'Aduhelm' developed by Biogen pharmaceuticals lowers amyloid β-plaques in the brain, a pathological hall mark of the disease, offers some hope in providing an effective cure. But some experts expressed doubts regarding its efficacy stating that it only slows down the progression of the disease but not a cure. Also, the drug is priced prohibitively high. Thus the quest for an effective and financially viable cure is far from over. The diagnosis of Alzheimer's disease is usually done based on symptoms observed, assisted by imaging of the brain. But unfortunately, by the time the diagnosis is confirmed by such procedures, irreversible damage would have been done in most of the cases. Identification of causative factors which can lead to early diagnosis so that the progression of the disease can be checked effectively is badly needed. The need for searching for biomarkers of this disease is emphasized in a previous study. Hence all aspects, even those indirectly related to this disease, need to be investigated. One such aspect is imbalance of certain trace elements in Alzheimer's patients compared to controls as such imbalance is hypothesized to aid neurodegeneration and apoptosis.

Investigations have been carried out in different countries with samples of brain tissue (postmortem),blood serum, whole blood and CSF collected from Alzheimer's patients and age matched controls. Various techniques like INA (Instrumental Neutron Activation Analysis), XRF (X-ray fluorescence), and AAS (Atomic Absorption Spectroscopy) were employed in these studies. Attempts were made to correlate the imbalance in concentration detected in the case of some trace elements in AD patients compared to controls with the etiology and pathological features of the disease. But there is a need to carry out such studies globally with large samples to arrive at universally valid conclusions that may pave a way for developing a supportive supplement therapy.

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