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Neuroprotective effect of lactoferrin on Alzheimer's disease; an impact of Akt/PTEN pathway: A pilot study

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Alzheimer's disease (AD) is one of the most common neurodegenerative diseases where deregulated PI3K/Akt pathway in response to phosphatase and tensin homolog (PTEN) over expression is involved. Lactoferrin (LF), a multifunctional iron-binding glycoprotein, is thought to be involved in AD pathology. However, direct evidence for its impact upon AD remains unclear. In order to elucidate its controversial role, fifty AD patients were randomly divided among two age and sex matched groups that received standard therapy without LF in one, treated with LF capsules (250 mg/day, p.o) for three months in the other arm. Both groups were compared to 15 control healthy volunteers. Elevated gene expression of tau, mitogen-activated protein kinase (MAPK), and PTEN associated with reduced expression of Akt were detected in the serum of AD patients. Significant improvement in serum levels of acetyl choline (Ach), serotonin (5-HT), anti-oxidant, anti-inflammatory markers, together with alleviation of amyloid beta 42 (Aβ42), cholesterol, oxidative stress markers, interleukin 6 (IL-6), heat shock protein 90 (HSP 90) and caspase-3 were detected after LF administration for three months. Reduced expression of PTEN, MAPK and tau together with elevated expression of Akt upon LF administration could provide an explanation for the possible protective mechanism of LF in AD course. Overall, the present study postulated the ability of LF to alleviate AD pathological cascade through modulating the expression of Akt/PTEN pathway, affecting the inflammatory and oxidative stress key players involved in AD pathology.

Biography

Rania Mohamed Kamel Hassan Mohamed Salama has completed her PhD at Ain Shams University and he is currently pursuing his Postdoctoral studies. She is an Assistant Professor of Pharmacology and Toxicology and Assistant Professor in Pharmacy Practice and Clinical Pharmacy Department in Faculty of Pharmacy at Misr International University. She has published three papers in international journals and has been serving as a Reviewer in reputable international journals.

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