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Healthy Aging Research

Opinion Article

Delaying of Brain Aging and its Consequences

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ABOUT THE STUDY

Most prevalent neurodegenerative disorders, such as mild cognitive impairment, dementias including Alzheimer's disease, cerebrovascular disease, Parkinson's disease, and Lou Gehrig's disease, are significantly increased by ageing. There are few insightful investigations on the molecular biology of the ageing brain in the absence of neurodegenerative illness or the neuropsychological profile of healthy older persons, despite the fact that much research has concentrated on age-related diseases.

However, research indicates that a number of structural, chemical, and functional changes in the brain as well as a wide range of neurocognitive alterations are linked to the ageing process. According to recent studies using model animals, the expression of genes at the single neuron level varies noticeably as an organism ages.

Delaying the effects of aging

Although the ageing process may be unavoidable, one may be able to lessen its impacts and severity. Although there is no agreement on effectiveness, the following have been linked to a delay in cognitive ageing: high academic level, physical activity, maintaining social and friendship networks, staying intellectually active through reading and other mental pursuits, preserving a nutritious diet that contains antioxidants, omega-3 fatty acids, and other beneficial nutrients.

Super agers: Recent longitudinal research investigations have genetically analysed centenarians and their progeny to find biomarkers that function as inhibitors of the harmful consequences of ageing. The CETP gene, in particular, has been associated with the prevention of Alzheimer's disease and cognitive decline. After controlling for demographic characteristics and APOE status, valine CETP homozygotes but not heterozygotes had a relative memory deterioration that was 51% lower than that of a reference group.

Cognitive reserve: Cognitive reserve is the capacity of a person to show no cognitive ageing symptoms despite an ageing brain. According to this theory, two individuals who share the same brain pathology could exhibit different clinical symptoms, with one patient continuing to function largely normally. The specific biochemical, genetic, and environmental factors that predispose one individual to cognitive decline and enable another to age more gracefully are investigated in studies of cognitive reserve.

Nun study: The autobiographical writings that the nuns wrote as they joined their Sisterhood were used by the researchers. The results indicate that early idea density, as measured by the quantity of ideas stated and the use of complicated prepositions in these essays was a significant predictor of a lower risk of Alzheimer's disease in later life. The relationship between idea density and brain weight, brain shrinkage, and neurofibrillary tangles was found to be substantial.

Hypothalamus inflammation and GnRH: Our ageing bodies may be related to the inflammation of the hypothalamus. They concentrated on the activation of the NF-B protein complex in the study's mouse test participants, which indicated an increase in activity with advancing age. GnRH, a hormone that has new anti-aging characteristics when given into mice outside the brain but has the opposite effect when injected into the hypothalamus, is also affected by this activation. It will take some time before this can be meaningfully used to humans because additional research on this pathway is required to comprehend the mechanisms underlying GnRH's anti-aging effects.

Inflammation: Inhibiting myeloid cells' EP2 signalling can prevent or correct the maladaptive inflammatory component of mouse brain ageing.

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