

Non-Alzheimer's dementia: From a Neuroscience and Lifescience perspective in the age of biotechnology

Dementia refers to a clinical syndrome characterized by the deterioration of the memory ability, progressive cognitive decline that hinders the ability to function. Although 2/3 of dementia cases develop related to Alzheimer's disease, the remaining 1/3 is defined as non-Alzheimer's dementia. Non-Alzheimer's dementias remain relatively unknown and often poorly diagnosed.

In recent years, with new molecular techniques that enable high throughput data to be obtained in laboratories, it has created a hope for many neurological diseases such as Alzheimer's disease. Thanks to the "omic" concept that came into our lives with these techniques, it enabled us to examine the mysterious parts of biology such as genome, transcriptome, proteome, microbiome and metabolome and thus gain a new perspective between host and microorganisms.

With this point of view, preclinical and clinical data showed that there is a bidirectional interaction between the host and the microorganism and led to the formation of the term "gut-brain axis" between the gastrointestinal system and the brain. This is very important for the regulation of the neural, hormonal, and immunological balance of the human being. Alteration of the composition of the gut microbiome has also been shown to independently increase the risk of dementia, like other traditional risk factors. The presence of microbiome-associated metabolites and bacterial products in the systemic circulation may increase, particularly with the inflammatory process that can lead to dementia. Despite all this information, it is not yet known how changes in the gut microbiome and microbiome-related metabolites affect cognitive function.

This special issue will focus on the progress that has been made in basic and clinical research to discover the underlying molecular pathogenesis mechanisms of this bidirectional interaction, provide the development of personalized treatments and to reveal potential biomarkers in considering new treatment options.

Submission Deadline: 1 December 2021

Submission: <https://jin.imrpress.com>

Impact Factor: 1.193

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