

RECENT
DEVELOPMENTS
IN THE
SYNTHESIS AND
APPLICATIONS
OF PYRIDINES

RECENT DEVELOPMENTS IN THE SYNTHESIS AND APPLICATIONS OF PYRIDINES

Edited by

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Pyridines in Alzheimer's disease therapy: Recent trends and advancements

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6.1 Introduction

Alzheimer's is named after a German Psychiatrist Alois Alzheimer while performing a histopathological study of his patient (Auguste Deter) brain, who died suffering from dementia, known as a physical disease that affects the brain [1]. Further, this was defined as a progressive neurodegenerative disorder, characterized by gradual loss of cholinergic neurons and accumulation of β -amyloid protein in the brain areas like the cortex and hippocampus. The disease onset starts with short-term memory impairment that gradually progresses to complete loss of cognitive function, weak performance of activities of daily life, loss of logical thoughts, emotional disturbances and erratic mood fluctuations, paranoia and hallucinations, and ultimately death [2,3].

The main causes of Alzheimer's are age-related factors, genetic, mutation, health, lifestyle, and environmental factors. However, the exact cause of Alzheimer is not very clearly understood. Early onset of Alzheimer may be due to genetic mutation. Late-onset Alzheimer may be due to several changes in the brain which occur in decades. Mostly this disease is seen in the elderly due to atrophy (shrinking) in various regions of the brain. The increased levels of metals such as Fe, Al, and Hg in the brain generate unstable reactive species like free radicals, increased lipid peroxidation and unsaturated fatty acid content, DNA oxidation, and decreased cytochrome C oxidase. Mutations in critical regions of amyloid precursor