ADAM10 in Alzheimer's disease: Pharmacological modulation by natural compounds and its role as a peripheral marker

Manzine P.R.

Ettcheto M.

Cano A.

Busquets O.

Marcello E.

Pelucchi S.

Di Luca M.

Endres K.

Olloquequi J.

Camins A.

Cominetti M.R.

Alzheimer's disease (AD) represents a global burden in the economics of healthcare systems. Amyloid-? (A?) peptides are formed by amyloid-? precursor protein (A?PP) cleavage, which can be processed by two pathways. The cleavage by the ?-secretase A Disintegrin And Metalloprotease 10 (ADAM10) releases the soluble portion (sA?PP?) and prevents senile plaques. This pathway remains largely unknown and ignored, mainly regarding pharmacological approaches that may act via different signaling cascades and thus stimulate non-amyloidogenic cleavage through ADAM10. This review emphasizes the effects of natural compounds on ADAM10 modulation, which eventuates in a neuroprotective mechanism. Moreover, ADAM10 as an AD biomarker is revised. New treatments and preventive interventions targeting ADAM10 regulation for AD are necessary, considering the wide variety of ADAM10 substrates.

ADAM10

Alzheimer's disease

Natural compounds

Pharmaceutical

?-Secretase

(6) gingerol

ADAM10 endopeptidase

alpha secretase

bryostatin 1

cryptotanshinone

curcumin

epigallocatechin gallate

ligustilide

natural product

retinoid

ADAM10 endopeptidase

ADAM10 protein, human

amyloid beta protein

amyloid precursor protein

biological marker

catechin

Ginkgo biloba extract

membrane protein

neuroprotective agent

plant extract

secretase

Alzheimer disease

drug mechanism

human

neuroprotection

nonhuman

priority journal

protein function

protein targeting

Review

treatment outcome

Alzheimer disease

analogs and derivatives

metabolism

ADAM10 Protein

Alzheimer Disease

Amyloid beta-Peptides

Amyloid beta-Protein Precursor

Amyloid Precursor Protein Secretases

Biomarkers

Catechin

Humans

Membrane Proteins

Neuroprotective Agents

Plant Extracts