

Pharmacological approaches to mitigate neuroinflammation in Alzheimer's disease

Uddin M.S.

Kabir M.T.

Mamun A.A.

Barreto G.E.

Rashid M.

Perveen A.

Ashraf G.M.

Alzheimer's disease (AD) is one of the most prevalent neurodegenerative diseases characterized by the formation of extracellular amyloid beta (A β) plaques and intracellular neurofibrillary tangles (NFTs). Growing evidence suggested that there is an association between neuronal dysfunction and neuroinflammation (NI) in AD, coordinated by the chronic activation of astrocytes and microglial cells along with the subsequent excessive generation of the proinflammatory molecule. Therefore, a better understanding of the relationship between the nervous and immune systems is important in order to delay or avert the neurodegenerative events of AD. The inflammatory/immune pathways and the mechanisms to control these pathways may provide a novel arena to develop new drugs in order to target NI in AD. In this review, we represent the influence of cellular mediators which are involved in the NI process, with regards to the progression of AD. We also discuss the processes and the current status of multiple anti-inflammatory agents which are used in AD and have gone through or going through clinical trials. Moreover, new prospects for targeting NI in the development of AD drugs have also been highlighted. © 2020 Elsevier B.V.

Alzheimer's disease

Anti-inflammatory agents

Immune system

Neuroinflammation

Proinflammatory molecules

advanced glycation end product receptor

amyloid beta protein

angiotensin 1 receptor

antiinflammatory agent

azeliragon

candesartan

cytokine

etanercept

gc 021109

granulocyte macrophage colony stimulating factor

immunoglobulin

minocycline

neflamapimod

nonsteroid antiinflammatory agent

nootropic agent

pioglitazone

prostaglandin synthase

rosiglitazone

sargramostim

telmisartan

thalidomide

unclassified drug

Alzheimer disease

antiinflammatory activity

cytokine release

disease exacerbation

drug targeting

human

insulin resistance

macrogia

mediator

microglia

mononuclear cell

nerve cell

nervous system inflammation

nonhuman

priority journal

protein expression

Review

signal transduction