Getting Away from Alzheimer's: Nitric Oxide Mediates Neuroprotection Against Neurotoxicity

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Abstract

Alzheimer's disease (AD) is a neurodegenerative disorder characterized by progressive memory loss and behavioral changes. There are currently no known treatments or medications for AD. Nitric oxide (NO) has long been regarded as a component of the neurotoxic insult brought on by Alzheimer's disease neuroinþammation.

However, this perception is being altered by focusing on early developments, prior to the onset of cognitive symptoms. This has brought to light NO's compensatory, neuroprotective function, which increases neuronal excitability to safeguard synapses. Modulation of voltage-gated potassium channel activity (Kv7 and Kv2) is one potential mechanism by which NO can increase excitability. An important next step for the ýeld is to determine the ionic mechanisms and signaling pathways that mediate this protection. A potential therapeutic option for preventing synapse loss early in disease could be found by harnessing the protective function of NO and related signaling pathways.

Introduction

A z e e d ea e a e f e dege e a e d de c e , c g dec e, a d a e dea a e a acc a ed b ad ea e- ec c f a e a d e [1]. e a e f f de e a A z e e d ea e (AD), c a ec 36 e e d de a d ed c ed e b 2050 [2]. eg ba ec c c f A z e e d ea e (AD) a e a ed be $604 b 2010, a g e ead g ca e f d ab a d e c ea f e de e e e ca e. e e c e c e f AD, a d e ed ca a a e a a abe a e e ec e d de a e ca e a d ea a e a e d ea e de g ca e .AD bec e a e de c f e de c a e d a age ; a, f e e a ead e: a d g eed f ab e ea e c ce a :.

e e: ac ca e f e a f AD ca e , a f a d c a e- e AD, c e ; H e e, g ca fac c de ad a ced age a d e a f e a e e f e a f e E ge e [5]. N e ge e c a a e bee de ed fa a ea - e AD, a a e a d e ed f f AD. e e e -1 e e -2 ge e (PSEN1, PSEN2) a e e a e a fa a A z e e d ea e. Add a , d ca a d a e a d ec 0c6 e e c6 e ba ed age a ca ec e ac e g e f a d ea e a bee f da e a . A g f a f g a de e a c e a ge e beg a e g ebef e e a de e a [7-9].Bef e e acc a f A a d a ed a , AD b a a e bee e: e e ce : da e a d a e e , c a e e ec e ca ed b e e a ed e e f eac e : ge a d ge ec e . e f a f A a d a ed a ca b e: ace ba e a d e c e d c f eac e : ge a d ge ec e . Add a , a bee a ac a f c g a, a a , a d d e a ca c g a g a c b e AD a ge e [10]. S a c a d e a dea a e e c ec e e ec f e e a ge c ec a , a c a f c e g c e e a d a g age- e a ed b a eg .I e e d, e d ea e ead g e b a , e g c g e dec e a d dea .

In Alzheimer's Disease, Nitric Oxide : Mechanisms and E ects

N c : de (NO) a e g a g ec e fa - eac g ce a c e e ce a ca be b ec e a d a ada e beca e aga a e a ca f ee d eac e b a e. A c d a ed e ec b a f c ade b e b NO e g ca e ec a a a d a , a a ed a , a d e d a . e e a, d c b e, a d e d e a NO a e (NOS , NOS , a d eNOS , e ec e) a e e c ded b ee d c ge e , NOS1, NOS2, a d NOS3.W e NOS e: e d ced a a ce a d de e de Ca2+/ ca d , b NOS a d eNOS a e c e e: e ed a d e e Ca2+/ca d f ac a . I e A z e e d ea e b a , eac f e e ce e e e , e d e a ce , a d a a ce - a e ed. e b ea d f e b d-b a ba e, de c e ce eb ac a e, c ea ed a a g a g, a d c a ge e a g a g a e a a fea e f AD [11]. e e a ee g c ad c e age ega d g e e f NO AD a d e e e ec e e : c, a

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