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Reviewing the Role of Resveratrol as a Natural Modulator of Microglial Activities.

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Abstract

Resveratrol (3,5,4'-trihydroxy-trans-stilbene), a natural phytoalexin found in grape-skin, exerts multiple biological activities, including anti-inflammatory, antiproliferative and antioxidant effects. In the past few years, mounting evidence has suggested that resveratrol is neuroprotective against a number of neurological diseases. An important contributor to the pathogenesis of neurological disorders is neuroinflammation, of which microglial activation is an important hallmark. It is possible that M1/M2 polarization of microglia may play an important role in controlling the balance between promoting and resolving neuroinflammation in the CNS. Immunomodulatory strategies capable of redirecting the microglial response toward the neuroprotective M2 phenotype could offer attractive options for neurodegenerative diseases with inflammatory components. The neuroprotective actions of resveratrol seem to be attributable to its anti-inflammatory properties, due not only to its direct scavenger effects versus toxic molecules but also to a capacity to upregulate natural anti-inflammatory defences, thus counteracting excessive responses of classically activated M1 microglia. The goal of this review is to summarize recent insights into the therapeutic potential of resveratrol as a natural modulator of microgliamediated neurotoxicity.

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