Curcumin as a therapeutic candidate for multiple sclerosis: Molecular mechanisms and targets

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Multiple sclerosis (MS) is a disease that has shown a considerable increase in prevalence in recent centuries. Current knowledge about its etiology is incomplete, and therefore it cannot be managed optimally utilizing targeted therapeutic regimens at each stage of the disease. MS progresses in different stages, beginning with a cascade of inflammation. The pivotal spark to initiate this cascade seems to be the migration of Th17 into the central nervous system across the blood?brain barrier (BBB) through the disrupted tight junctions. Coupling of interleukin (IL)-17 and IL-22 to their receptors in the BBB layer facilitates this migration. Subsequently, axon degeneration and the various manifestations of nerve?muscle disorders appear. Curcumin, a major component of turmeric, is derived from Curcuma longa, which belongs to the Zingiberaceae family. Numerous properties of curcumin have been identified recently, some of which can be effective in the treatment of MS, particularly the anti-inflammatory properties via inhibition of secretion of proinflammatory cytokines. In this paper, we will review the various properties and key effects of curcumin for the treatment of MS. © 2018 Wiley Periodicals, Inc.

curcumin

immune system

inflammation

multiple sclerosis (MS)

curcumin

interleukin 1

interleukin 17

interleukin 22

interleukin 6

interleukin 8

macrophage inflammatory protein 2

antiinflammatory agent

curcumin

cytokine

plant extract

turmeric extract

antiinflammatory activity

blood brain barrier

calcium cell level

CD4+ T lymphocyte

cell adhesion

cell differentiation

cell migration

Curcuma longa

cytokine production

drug bioavailability

drug delivery system

drug mechanism

drug metabolism

human

immune response

immunocompetent cell

in vitro study

in vivo study

microemulsion

microencapsulation

multiple sclerosis

nerve fiber degeneration

nonhuman

polymerization

prevalence

priority journal

regulatory T lymphocyte

Review

Th17 cell

tight junction

animal

chemistry

Curcuma

inflammation

metabolism

multiple sclerosis

Animals

Anti-Inflammatory Agents

Curcuma

Curcumin

Cytokines

Humans

Inflammation

Multiple Sclerosis

Plant Extracts