

Effects of Curcumin on Microglial Cells

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Microglia are innate immune system cells which reside in the central nervous system (CNS). Resting microglia regulate the homeostasis of the CNS via phagocytic activity to clear pathogens and cell debris. Sometimes, however, to protect neurons and fight invading pathogens, resting microglia transform to an activated-form, producing inflammatory mediators, such as cytokines, chemokines, iNOS/NO and cyclooxygenase-2 (COX-2). Excessive inflammation, however, leads to damaged neurons and neurodegenerative diseases (NDs), such as Parkinson's disease (PD), Alzheimer's disease (AD), Huntington's disease (HD), multiple sclerosis (MS) and amyotrophic lateral sclerosis (ALS). Curcumin is a phytochemical isolated from *Curcuma longa*. It is widely used in Asia and has many therapeutic properties, including antioxidant, anti-viral, anti-bacterial, anti-mutagenic, anti-amyloidogenic and anti-inflammatory, especially with respect to neuroinflammation and neurological disorders (NDs). Curcumin is a pleiotropic molecule that inhibits microglia transformation, inflammatory mediators and subsequent NDs. In this mini-review, we discuss the effects of curcumin on microglia and explore the underlying mechanisms. © 2019, Springer Science+Business Media, LLC, part of Springer Nature.

Curcumin

Microglia, neuroinflammation

Neurodegenerative diseases

Neuroprotection

curcumin

peroxisome proliferator activated receptor gamma

STAT3 protein

transcription factor Nrf2

antiinflammatory agent

curcumin

antineoplastic activity

cell activation

cell function

cell protection

central nervous system

clinical trial (topic)

degenerative disease

disease association

drug effect

drug mechanism

glioblastoma

human

immunocompetent cell

in vitro study

in vivo study

microglia

molecularly targeted therapy

nervous system inflammation

nonhuman

Parkinson disease

Persian Gulf syndrome

priority journal

Review

signal transduction

animal

brain

encephalitis

immunology

microglia

nerve cell

Animals

Anti-Inflammatory Agents

Brain

Curcumin

Encephalitis

Humans

Microglia

Neurons