Lectin

Lectins are carbohydrate-binding proteins, macromolecules that are highly specific for sugar moieties of other molecules. They are also known as phytohemagglutinins. Lectins perform recognition on the cellular and molecular level and play numerous roles in biological recognition phenomena involving cells, carbohydrates, and proteins.

Lectins also mediate attachment and binding of bacteria and viruses to their intended target.

Lectin-like oxidized low-density lipoprotein receptor-1 (LOX-1), a member of the scavenger receptor family, recognizes multiple ligands and participates in several inflammatory responses, but its function within the central nervous system (CNS) remains unclear. In this study, we discovered an increased LOX-1 expression in activated microglia in vivo and in vitro. Employing the specific inhibitors, we found that conditioned medium of necrotic neurons (Necrotic-CM) induced microglial LOX-1 expression through the MAPKs/NF-κB pathway. Silencing LOX-1 inhibited MAPK phosphorylation, NF-κB-p65 nuclear transportation, and pro-inflammatory factor production in microglia exposed to Necrotic-CM. Furthermore, utilizing the conditioned medium of activated microglia (MG-CM), we discovered microglial LOX-1 aggravated the neuroinflammation-induced neuronal apoptosis. Collectively, a LOX-1/MPAKs/NF-κB positive loop might promote microglia activation and drive the vicious cycle of neuroinflammation and neuronal injury [1)].

1)
Ge X, Zhang DM, Li MM, Zhang Y, Zhu XY, Zhou Y, Peng X, Shen AG. Microglial LOX-1/MAPKs/NF-κB positive loop promotes the vicious cycle of neuroinflammation and neural injury. Int Immunopharmacol. 2019 Feb 23;70:187-200. doi: 10.1016/j.intimp.2019.02.013. [Epub ahead of print] PubMed PMID: 30807932.