구두발표-3

식물 자원을 활용한 염증반응 조절

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Modulation of Inflammation by Plant Resources

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Chrysanthemum zawadskii (*C. zawadskii*) is used in traditional East Asian medicine for the treatment of various diseases, including inflammatory disease. However, it has remained unclear whether extracts of *C. zawadskii* inhibit inflammasome activation in macrophages. The present study assessed the inhibitory effect of an ethanol extract of *C. zawadskii* (CZE) on the activation of the inflammasome in macrophages and the underlying mechanism. Bone marrow[-derived macrophages (BMDMs) were obtained from wild-type C57BL/6 mice. The release of IL-1β and lactate dehydrogenase in response to nucleotide-binding oligomerization domain-like receptor (NLR) family pyrin domain containing 3 (NLRP3) inflammasome activators, such as ATP, nigericin and monosodium urate (MSU) crystals, was significantly decreased by CZE in lipopolysaccharide(LPS)-primed BMDMs. Western blotting revealed that CZE inhibited ATP-induced caspase-1 cleavage and IL-1β maturation. To investigate whether CZE inhibits the priming step of the NLRP3 inflammasome, we confirmed the role of CZE at the gene level using RT-qPCR. CZE also downregulated the gene expression of NLRP3 and pro-IL-1β as well as NF-κB activation in BMDMs in response to LPS. Apoptosis associated speck-like protein containing a caspase-recruitment domain (CARD) oligomerization and speck formation by NLRP3 inflammasome activators were suppressed by CZE. By contrast, CZE did not affect NLR family CARD domain containing protein 4 (NLRC4) or absent in melanoma 2 (AIM2) inflammasome activation in response to *Salmonella typhimurium* and poly(dA:dT) in LPS-primed BMDMs, respectively. The results revealed that three key components of CZE, namely linarin, 3,5-dicaffeoylquinic acid and chlorogenic acid, decreased IL-1β secretion in response to ATP, nigericin and MSU. These findings suggest that CZE effectively inhibited activation of the NLRP3 inflammasome.

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