

Inhibitory effect of black radish (*Raphanus sativus* L. Var. niger) extracts on lipopolysaccharide-induced inflammatory response in the mouse monocyte/macrophage like cell line RAW 264.7

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LPS로 인한 염증 반응이 유도 된 RAW 264.7 세포에서 검은 무 추출물의 염증 억제 효과

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요약

Black radish (*Raphanus sativus* L. Var. niger), which is cultivated worldwide, is used in traditional medicine as it aids liver function, gastric secretion, gallbladder function, and gallstone mitigation. In this study, we examined the anti-inflammatory effects of black radish extract (BRE) on the lipopolysaccharide (LPS)- and IL-6-mediated inflammatory responses in the RAW 264.7 cell lines. Our findings show that BRE significantly ameliorated LPS-induced nitric oxide (NO) release and production of pro-inflammatory cytokines, such as IL-1 β , IL-6, TNF- α , and PGE $_2$. The levels of COX-2 and iNOS in LPS-stimulated RAW 264.7 cells were found to be suppressed by BRE. Further, BRE significantly suppressed the LPS-induced expression of mRNAs encoding COX-2, iNOS, IL-1 β , IL-6, and TNF- α in a concentration-dependent manner. BRE treatment significantly inhibited JAK2 and STAT3 phosphorylation in IL-6- and LPS-treated RAW 264.7 cells. In addition, BRE increased the levels of phosphorylated ERK and JNK under the same conditions. Moreover, BRE induced high NRF2 levels and its target gene HO-1 in the absence of LPS. These data demonstrate that BRE may be beneficial for treating inflammation through selective immunomodulatory effects, which may be mediated by inhibition of the STAT3/JAK2 and activation of the NRF2/HO-1 signal transduction pathways.