

Anti-inflammation effects of 8-oxo-9-octadecenoic acid isolated from *Undaria peterseniana* in lipopolysaccharide-stimulated macrophage cells

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Abstract

The aim of this study was to investigate the anti-inflammatory activity of 8-oxo-9-octadecenoic acid (OOA) isolated from *Undaria peterseniana* by examining its ability to inhibit the lipopolysaccharide (LPS)-induced production of inflammatory mediators in RAW 264.7 macrophage cells. We found that OOA significantly suppressed the LPS-induced production of nitric oxide (NO) and inflammatory cytokines. OOA downregulated the LPS-induced expression of inducible nitric oxide synthase and cyclooxygenase-2 proteins. With respect to proinflammatory signaling pathways, OOA inhibited LPS-induced mitogen-activated protein kinase signaling by inhibiting the phosphorylation of c-Jun N-terminal kinase (JNK) and extracellular signal-regulated kinase (ERK). Moreover, OOA inhibited LPS-induced nuclear factor (NF)- κ B signaling by reducing the phosphorylation of I κ B- α and p50 proteins. These results indicate that OOA significantly reduces proinflammatory signaling, which results in reduced expression of cytokines and proinflammatory mediators. Taken

together, these results suggest that OOA has potent anti-inflammatory effects and could be considered an effective anti-inflammatory agent.

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