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Ethanol Extract of Potentilla pradoxa Nutt Inhibits LPS-induced Inflammatory Responses via NF-κB and AP-1 Inactivation

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Abstract : Potentilla species (Rosasease) have been used in traditional medicine to treat different ailment, disease or malady. In this study, we investigated the anti-inflammatory effects of ethanol extracts of NUTT (EPP) in lipopolysaccharide (LPS)-induced Raw 264.7 macrophages and septic mice. EPP suppressed LPS-induced nitric oxide (NO) and prostaglandin E2 (PGE2) production in LPS-induced Raw 264.7 macrophages. Consistent with these observations, EPP reduced the expressions of inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (COX-2) by downregulation of their promoter activities. EPP inhibited tumor necrosis factor-α (TNF-α), interleukin-6 (IL-6) and interleukin-1β (IL-1β) at production and mRNA levels. Molecularly, EPP attenuated the LPS-induced transcriptional activity, and DNA-binding activity of nuclear factor-κB (NF-κB), and this was associated with a decrease of translocation and phosphorylation of p65 NF-κB by inhibiting the inhibitory κB-α (IκB-α) degradation and IκB kinase-α/β (IKK-α/β) phosphorylation. Furthermore, EPP suppressed the LPS-induced activation of activator protein-1 (AP-1) by reducing the expression of c-Fos and c-Jun in nuclear. EPP also reduced the phosphorylation of mitogen-activated protein kinase (MAPK), such as p38 MAPK and c-Jun N-terminal kinase/stress-activated protein kinase (JNK). In a sepsis model, pretreatment with EPP reduced the LPS-induced lethality. Collectively, these results suggest that the anti-inflammatory effects of EPP were associated with the suppression of NF-κB and AP-1 activation, and support its possible therapeutic role for the treatment of sepsis.

Keywords : anti-inflammation, activator protein-1, nuclear factor κB, Potentilla paradoxa Nutt
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