Vasorelaxant and anti-inflammatory activities of the methylene chloride fraction of foeniculum vulgare fruit extract

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This study investigated the vasorelaxant and anti-inflammatory activities of the methylene chloride fraction of crude methanolic Foeniculum vulgare fruit extract (FV). The vasorelaxant activity was examined on isolated rat aortic ring preparations precontracted with phenylephrine whereas the anti-inflammatory activity was examined in RAW 264.7 macrophage cells. FV attenuated the vasoconstriction of precontracted aortic strips in a dose-dependent manner. This effect was found to be endothelium-dependent and through the nitric oxide (NO)-3',5'-cyclic monophosphate pathway. In the anti-inflammatory assays, FV reduced NO release by inhibiting inducible NO synthase protein and mRNA and also suppressed cyclooxygenase-2 expression. It decreased the lipopolysaccharide-induced secretions of tumour necrosis factor-α, interleukin (IL)-1β and IL-6 and significantly reduced the phosphorylation of c-Jun amino-terminal kinases (JNK1) and extracellular signal-regulated kinase-1 (ERK1/2). Our results demonstrate that the methylene chloride fraction of the crude methanolic FV possesses potent vasorelaxant and anti-inflammatory activities.