Anti-inflammatory activity of compounds from Boesenbergia longiflora rhizomes

Teeratad Sudsai\textsuperscript{a,b,d}, Samran Prabpai\textsuperscript{c}, Palangpon Kongsaeree\textsuperscript{c}, Chatchai Wattanapiromsakul\textsuperscript{a}, Supinya Tewtrakul\textsuperscript{a,b,c}

\textsuperscript{a} Department of Pharmacognosy and Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Prince of Songkla University, Songkhla 90112, Thailand
\textsuperscript{b} Department of Chemistry and Center of Excellence for Innovation in Chemistry, Faculty of Science, Prince of Songkla University, Songkhla 90112, Thailand
\textsuperscript{c} Department of Chemistry and Center for Excellence in Protein Structure and Function, Faculty of Science, Mahidol University, Bangkok 10400, Thailand
\textsuperscript{d} Faculty of Oriental Medicine, Rangsit University, Pathumthani 12000, Thailand

Keywords: Boesenbergia longiflora Daucaane sesquiterpenes Flavonoids Diarylheptanoids Anti-inflammatory activity

1. Introduction

Nitric oxide (NO) synthesized by inducible nitric oxide synthase (iNOS) is considered as a mediator and regulator in the pathology of inflammatory diseases including atherosclerosis, rheumatoid arthritis, diabetes, septic shock, transplant rejection, and multiple sclerosis, leading to cell death (Aktan, 2004). NO is produced in response to inflammatory stimuli in various inflammatory cells such as macrophage. Lipopolysaccharide (LPS) is the major component which derived from the outer membrane of the Gram-negative bacteria such as Escherichia coli. The exposure of macrophage cells to bacterial LPS is well known to increase iNOS gene expression and excessive production of NO for prolonged periods, leading to the initiation of an inflammatory response. This excessive production of NO also attacks normal tissue surrounding the infected area by binding with other superoxide radical and act as a reactive radical which damages normal cell function (Korhonen et al., 2005; Min et al., 2009; Tewtrakul et al., 2009).

Therefore, the inhibition of NO production may be beneficial in therapeutic consideration of inflammatory disorders. The Boesenbergia spp. are widely distributed from India to Southeast Asia with approximately 80 species worldwide and 19 species were previously accounted for Thailand (Delin and Larsen, 2000; Techaprasan et al., 2006). The rhizomes of Boesenbergia longiflora (Wall.) have been used for treatment of inflammatory bowel disease, ulcerative colitis, abscess and aphthous ulcer by Thai traditional healers (Chuakul and Boonpleng, 2003; Delin and Larsen, 2000; Techaprasan et al., 2006).