

Antioxidant and anti-inflammatory activities of extracts of betel leaves (Piper betle) from solvents with different polarities

ABSTRACT

The influence of solvents with different polarities on the antioxidant and anti-inflammatory properties of betel leaf extracts (Piper betle) was investigated. The solvents used were water, ethanol, ethyl acetate and hexane. High performance liquid chromatography (HPLC) was used to determine the chemical profiles and concentrations of the active compounds, namely, hydroxychavicol (HC) and eugenol (EU). The antioxidant potential of the extracts was evaluated using two in vitro assays—xanthine/xanthine oxidase superoxide scavenging assay (SOD assay) and 1,2-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging assay (DPPH assay). The anti-inflammatory assays used were hyaluronidase (HYA), xanthine oxidase (XOD) and lipoxygenase (LOX) inhibition assays. The HPLC results revealed that HC and EU were detected in all types of extracts and the concentrations were highest in the water extract. The highest extraction yield was obtained using water. All the extracts were highly active in both antioxidant assays with water extract showing the strongest inhibition. The extracts also exhibited significant inhibition in XOD and LOX assays. The results indicated that the bioactivity of the extracts was related to HC and EU.

Keyword: Medicinal plant; Bioactivity; High performance liquid chromatography; In vitro assay