Abstract

Callus and cell suspension cultures of Silybum marianum (L.) Gaertn. (Asteraceae) were established from in vitro germinated sterile plantlets. The cultures grew in Murashige and Skoog medium containing 1 mg l-1 2,4-dichlorophenoxyacetic acid (2,4-D) and 0.1 mg l-1kinetin. A reversed phase-high performance liquid chromatography method for determination of flavanolignans in plant material was developed using an isocratic solvent system comprising acetonitrile and water containing 0.5% (v/v) phosphoric acid. Silychristin was the major flavanolignan produced by the cultured cells followed by silydianin. Elicitation of cultured S. marianum cells with 100 lg ml-1 yeast extract increased silychristin production from 0.11 to 0.23 mg g-1 fresh weight. Free radical scavenging activity was tested for the cultured cells using 1,1-diphenyl picryl hydrazyl (DPPH) radical. Extract prepared from the cultured cells of S. marianum showed 48% inhibition compared to 55% inhibition of the extract prepared from the fruits. Cytotoxic activity was tested using liver carcinoma cell line (HEPG2). Cultured cells and fruit extracts showed a significant cytotoxic activity of IC50 = 1.01 and 0.47 lg, respectively. Extract of S. marianum cultured cells ameliorated the adverse effects of carbon tetrachloride-induced hepatic injury in rats and