

Abstract

In Vitro Cytotoxic Effect Evaluation of *Dioscorea communis* (L.) Caddick & Wilkin Rhizome and Stem Extracts on Hepatocellular Carcinoma Cells [†]

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[†] Presented at the 2nd International Conference on Natural Products for Cancer Prevention and Therapy, Kayseri, Turkey, 8–11 November 2017.

Published: 15 November 2017

Abstract: Plant kingdom still has an important potential for cancer treatment as natural source of numerous active small molecules with various pharmacological properties. The aim of this study was to firstly investigate in vitro cytotoxic activities rhizome and stem extracts of *Dioscorea communis* (L.) Caddick & Wilkin (named “Sarmaşık” locally) collected in Turkey. The cytotoxic and genotoxic effects at different concentrations (50–500 µg/mL) of each extract was determined using WST-1 proliferation and Comet assay against hepatocellular carcinoma (HepG2 and SNU-449) cell lines compared with HUVEC cells. The morphological changes of these cells treated with *D. communis* extracts was screened by acridine orange/ethidium bromide staining. We found that the petroleum ether rhizome extracts showed higher cytotoxic and genotoxic activity than stem extracts to all cell lines in a dose and time dependent manner ($p < 0.05$). These extracts induced apoptosis and DNA damage at 500 µg/mL after 72 h exposure. However, these extracts exhibited significant cytotoxic, genotoxic and apoptotic damage against HUVEC cells. As a result, our data suggest that the active chemical constituent(s) in different part of plants and their mechanisms of inducing apoptosis and DNA damage should be determined in further investigations by in vitro studies compared with control cells.

Keywords: hepatocellular carcinoma; plant extracts; *Dioscorea communis*; apoptosis



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