

Abstract

Investigation of Apoptotic Effects of Usnic Acid on Hepatocellular Carcinoma [†]

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Abstract: Hepatocellular carcinoma (HCC) ranks the sixth among common cancers in the world due to limited treatment option. In recent years, fungicides and lichen metabolites have gained importance in development of new generation chemotherapeutics. For this purpose, we aimed to investigate the cytotoxic and apoptotic effects of a lichen metabolite, usnic acid (UA), on HCC cells in the present study. After treatment with different concentrations (6.25–100 μ M) of UA for 48 h, a significant decrease in the number of viable cells was determined in HCC cells. The HepG2 and SNU-449 cell viability decreased to 21.8% and 15.6% at the maximum concentration, respectively ($p < 0.05$). However cell viability ratio was 104.3% in HUVEC cells. Additionally, UA induced particularly late apoptosis in HCC cells in a dose-dependent manner. The percentage of apoptotic cells was significantly increased to 86.67% and 81.36% at 100 μ M UA in HepG2 and SNU-449 cells, respectively. To confirm the apoptosis-inducing effect of UA, cells were stained with AO/EB and the morphological characteristic of apoptotic cell death were observed. In conclusion, UA displayed cytotoxic and apoptotic activity against human HCC cells without damaging control cells. Thus, we think that UA may be a suitable candidate as therapeutic agent for treatment of HCC.

Keywords: Hepatocellular carcinoma; usnic acid (UA); cytotoxicity; apoptosis

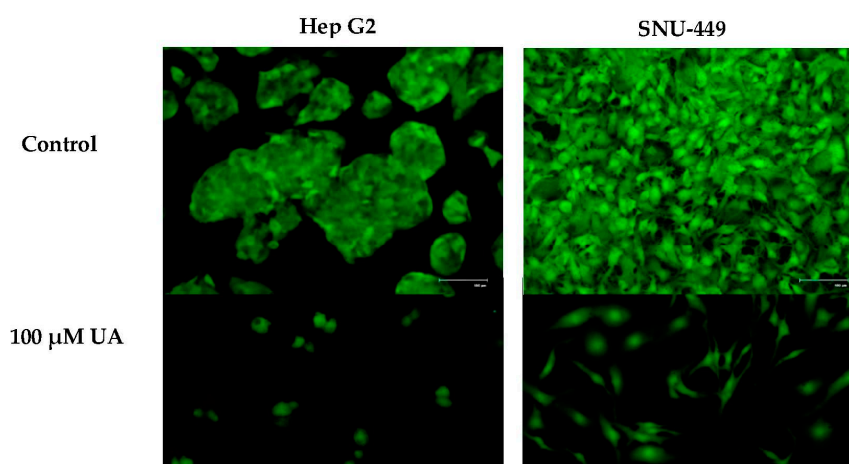


Figure 1. Morphological changes caused by UA in Hep G2 and SNU-449 cells.

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