



Abstract

The Cytotoxic and Apoptotic Effects of Usnic Acid on Prostate Cancer versus Normal Cells [†]

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Abstract: Prostate cancer (PC) is the most common epithelium-derived solid tissue cancer in males in developed countries. Lichen seconder metabolites have an important potential as new generation chemotherapeutics. Therefore, we evaluated the cytotoxic and apoptotic effects of a lichen seconder metabolite, usnic acid (UA), on androgen receptor-positive PC cells (LNCaP) and also prostate normal cell line (RWPE-1) using WST-1 proliferation assay, acridine orange/ethidium bromide (AO/EB) staining, and annexin V analysis. The viability of LNCaP cells was significantly reduced ($p < 0.05$) after exposure to increasing concentrations of UA (6.25–150 μ M). The LNCaP cell viability decreased to 34.14%, whereas RWPE-1 viability ratio was 109.79% at 150 μ M UA for 48 h. UA induced especially early apoptosis in LNCaP cells and total apoptotic cell ratio was 69.01% at 150 μ M for 48 h. Apoptotic morphology was also detected with AO/EB in LNCaP cells but not in RWPE-1 cells. Consequently, UA displayed more cytotoxic and apoptotic effects on PC cells than prostate normal cells. Thus, we suggest that UA might be one of the important lichen metabolites in further investigations for prostate cancer therapy.

Keywords: apoptosis; prostate cancer; usnic acid (UA); cytotoxicity

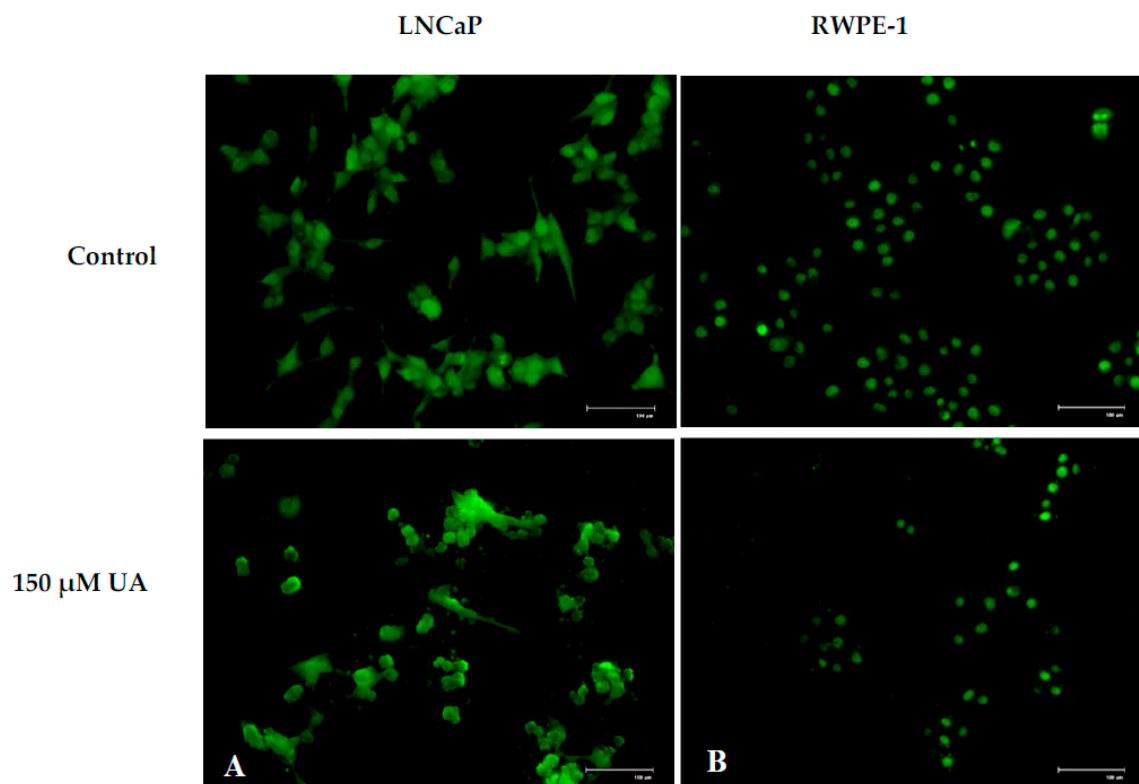


Figure 1. Morphological changes in LNCaP (A) and RWPE-1 (B) cells after 150 μ M UA treatment for 48 h.

Conflicts of Interest: The authors declare no conflict of interest.



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