

March 11-12, 2019
London, UK

Am J Ethnomed 2019, Volume 6
DOI: 10.21767/2348-9502-C1-009

Cuban propolis and nemorosone in combination with chemotherapeutic agents induce a synergistic cytotoxic effect in drug-resistant human colon carcinoma cells

Y Frión-Herrera, D Gabbia and M Carrara

University of Padova, Italy

Propolis is a resinous product collected by honeybees from the buds and exudates of various plant sources. This natural product has been used empirically as a traditional remedy in folk medicine for centuries. Several studies have confirmed that propolis mono-therapy can inhibit the growth of different carcinoma cells due to its chemical composition. At present, there are few studies about the possible use of this natural product in the treatment of chemo-resistant tumors. Combination experiments were carried out in order to study the ability of Cuban propolis extracts (CP) and nemorosone, its main phytocomponent, to increase the antiproliferative efficacy of traditional cytotoxic chemotherapeutic drugs doxorubicin (Dox) and oxaliplatin (Oxa) in human colon carcinoma cells (LoVo), doxorubicin resistant cells (LoVo Dox) and oxaliplatin resistant cells (LoVo Oxa). The effects of combination therapy were investigated in vitro,

evaluating cell viability at 24, 48 and 72 hrs by MTT assay. Synergism/additivity/antagonism effect was assessed by isobologram/combination index analysis. Molecular mechanism of combination treatment was examined assessing LDH release, Annexin/PI assay, ROS production, mitochondrial membrane potential ($\Delta\Psi_m$) disturbance and ATP intracellular levels. Our results revealed that combination treatment resulted in a significantly synergistic antiproliferative and cytotoxic effect at 72 hrs with respect to monotherapy, in particular in drug-resistant cell lines. Furthermore, combined treatment induced apoptosis cell death with a marked disruption of $\Delta\Psi_m$, decrease in ATP production and induction of ROS. These findings indicate that combination of CP or nemorosone with classical chemotherapeutic drugs may represent an intriguing treatment option for drug-resistant human colon carcinoma.