

CYTOTOXIC ACTIVITY OF JUNIPERUS COMMUNIS ESSENTIAL OIL FROM DIFFERENT GEOGRAPHICAL ORIGIN

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ABSTRACT

Essential oils from a broad spectrum of plant species have been shown to have antimicrobial, antioxidant, cytotoxic and/or antitumoral activity. *Juniperus communis* has been extensively used in traditional medicine in Serbia.

Juniperus communis L. (common juniper) is wide-spreading conifer, with small purple-black berries, used particularly in flavours, perfumes and pharmaceutical compounds (for example, for their diuretic, hypoglycaemic, anti-inflammatory, antibacterial and antifungal properties) and in the aromatisation of alcoholic beverage like beer and gin. Extracts and essential oil (EO) are used in cosmetics and food industry, and it is recognized by the European Pharmacopoeia as pharmaceutical raw material.

Juniper berries contain between 0.2–3.42% of essential oil. It is composed largely of monoterpenes such as, α -pinene, β -pinene, myrcene, sabinene and limonene, sesquiterpenes, aldehydes, alcohols and other oxygenated compounds. The composition of common juniper EO has been widely investigated and has been shown to be affected by the age and geographical origin of the plant, as well as ripeness of the berries. Thus, this study is based on determining the chemical profile and antiproliferative activity of juniper essential oil from Serbia and the Russian Federation.

The antiproliferative activity of the juniper berry essential oil, originated from Serbia and Russian Federation, was evaluated in vitro against three different humans cancer cell lines: the human cervix adenocarcinoma HeLa cells, the human lung adenocarcinoma A549 cells, the human colon adenocarcinoma LS-174 cells and normal fibroblast MRC-5 cells. Evaluation of cytotoxicity revealed that both Serbian and Russian juniper oil possess a cytotoxic potential against HeLa cells line. The MTT assay determined that cytotoxicity against A549 and LS-174 cells were the same, low, for both EOs.

Therefore, juniper oil can be considered with a beneficial effect on survival, immune regulation, and quality of life.