

Chemical Composition and Antioxidant and Antimicrobial Activities in Biofilm Inhibition of the Essential Oil of *Juniperus Communis L* (Juniper)

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Objectives

This study aims to research, through screening the chemical composition and the antimicrobial effect of essential oils of *Juniperus communis L* used in traditional medicine in order to use new molecules and counter a global health problem which is: resistance to antibiotics.

Materials and Methods

The essential oil chemical composition of essential oils is determined by GC and GC / MS

• **Strains:** We studied four bacterial species based on the frequency of clinical isolated *Escherichia coli*, *P.mirabilis*, *Staphylococcus aureus* and *C. albicans* yeast and *A.baumanii*.

The antioxidant activity was evaluated by DPPH test, and the reduction of iron.

The method of aromatogramme to highlight the action of essential oils, in parallel susceptibility of these strains was performed.

The calculation of the MIC and MBC is also performed on solid media with decimal dilutions of essential oils.

The biofilm formation inhibition is done on 96-well plate by the crystal violet method (CV).

Reading the Results

The essential oil of juniper harvested in Algeria Medea gives 2.51% of gasoline by steam distillation.

By GC and GC / MS, thirty six compounds were identified representing 91.9% of the total gasoline. the α -pinene (22.60%), BICYCLOL (12.71%), limonene (9.75%), borneol (4.96%), Beta myrcene (3.7%), D limonene (4.06%) and the camphene (2.12%) are the main constituents.

The study of antioxidant activity by DPPH test and iron reduction has proved very interesting.

The essential oil is active in vitro against *Escherichia coli* bacteria, *P.mirabilis*, *Staphylococcus aureus* and *C. albicans* yeast *A.baumanii* and with diameters of inhibition ranging from 15 to 40 mm depending on the strain, with marked inhibition *C. albicans*.

The essential oil has shown strong activity against all microorganisms. In bacteria, *Escherichia coli* and *Staphylococcus aureus* have shown some resistance to 1/5000 (v / v). *C.albicans* was completely inhibited all to 1/2000 (v / v).

Likewise, biofilm inhibition forms is very significant in compared with the negative witness.

In conclusion, there is an interesting activity of the essential oil on the strains used, especially *C. albicans* which deserves further exploitation and applications to know the mode of action at the molecular level, and the components involved in inhibition in a significant way.

Keywords

Juniper, GC / MS, DPPH, iron reduction, aromatogramme, CMI, CMB