

Investigation of antioxidant activity of the essential oils of different parts of *Juniperus sabina* (*Cupressaceae*) by TBARS method in comparison with vitamin E.

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Background and Aims: In this study, antioxidant activity of the essential oils of different parts of *Juniperus sabina* and their pure components were investigated in comparison with vit E.

Methods: Essential oils of fruit, male and female leaves of *J. Sabina* were obtained. Antioxidant activity of different concentrations (0.1, 0.5, 1, 4, 20, 40 mg/mL in methanol) of each oil was evaluated using thiobarbituric acid reactive species (TBARS) method. In this method egg yolk was used as oxidable substrate; 2, 2'-azobis (2-amidinopropane) dihydrochloride (ABAP) as a radical initiator and α -tocopherol as a reference. Also, important components of these essential oils such as sabinene, α -pinene, β -pinene, limonene, α -thujene, γ -terpinene, were tested for their antioxidative activity in comparison with vit E.

Results: Essential oils of different parts of *J. sabina* showed antioxidant activity but significantly less than vit E ($P < 0.001$). Among different parts of this plant, fruit oil showed the most and the oil of male leaves showed the least antioxidant activity. By increasing the concentrations, antioxidant effect of all the essential oils increased. At concentrations of 20 and 40 mg/mL, antioxidative activity was significantly higher than the other concentrations. Among the pure components, γ -terpinene showed the highest activity with no significant difference as compared to vit E at concentrations of 20 and 40 mg/mL. Among the oil components, α -pinene showed the lowest activity. ANOVA and Tukey-Kramer tests were used to analyse the data. By calculating EC50 for essential oils of different parts of the plant, the lowest one was related to *J. sabina* fruit (25.055mg/mL) while the highest one was related to *J. sabina* male leaves (52.166mg/mL).

Conclusions: According to the findings, essential oil of fruit of *J. sabina* has the highest antioxidant activity especially at high concentrations. This effect is probably due to the components of this plant oil, particularly γ -terpinene.

Keywords: *Juniperus Sabina*; Cupressaceae; Antioxidative activity; TBARS method