

OP5. Juniper berry (*Juniperus communis* L.) supercritical extract, essential oil, and absolute comparison

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Supercritical fluid extraction (SFE) of essential-oil constituents has absorbed much attention, especially in cosmetic, pharmaceutical and food industries, because it is an alternative to conventional processes such as organic-solvent extraction and steam distillation [1]. SFE of plant material with CO₂ allows its processing at low temperatures, therefore limiting the thermal degradation of its components, and avoiding the use of solvents prohibited in cosmetic or food products [1]. Moreover, it was shown that essential-oil constituents and light fractions of the resins are selectively extracted with this technique, producing an extract with the characteristics of the absolute [2].

Juniper berries, *Juniperus communis* L. (Cupressaceae), are a rich source of both volatile terpenes and lipophilic compounds with higher molar masses, such as resins and fats. The analysis of juniper berry supercritical extraction processes indicated unequivocally that, depending on the chosen process parameters, it is possible to obtain extracts from the same raw material in a different yield, with different chemical composition, physical and organoleptic properties.

The compositions of the essential oil (EO), absolute and supercritical CO₂ extract of juniper berries were analyzed by GC–MS. The chemical composition and physical properties of the extract run at 80 bar and temperature of 40 °C were similar to the juniper berry essential oil. However, it showed a lower ratio of terpene hydrocarbons to their oxygenated derivatives in comparison with the EO, which is reflected in its smell: more beneficial and natural–similar to the absolute odor.

References:

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