

IS2. Static headspace GC-MS analysis versus GC-MS analysis of essential oils

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The composition of essential oils (EO) of twelve plant species was compared with the corresponding headspace (HS) volatiles. Samples were prepared from fresh or dried whole above-ground parts, leaves, flowers and roots of the following plant species: *Achillea coarctata* [1], *A. crithmifolia* [2], *Angelica panicicii* [3], *Peucedanum longifolium* [4,5], *Chaerophyllum hirsutum* [6], *C. aureum* [7], *C. aromaticum* [8], *Origanum heracleoticum* [2], *Pastinaca hirsuta* [9], *Thymus glabrescens* [10], *T. praecox* [10], and *T. pulegoides* [10].

The following was noted:

- Monoterpenoids were present in HS volatiles with at least 90%.
- The investigated essential oils and the corresponding HS volatiles were different in quantitative terms for most monoterpenes while for the sesquiterpenes, there was an additional difference in qualitative terms.
- There was a negative correlation between the amount of thymol and carvacrol in EOs and the quantity of *p*-cymene and γ -terpinene in the HS.
- The same relationship was observed between linalool oxides and β -ocimenes.
- The relative amounts of α -terpineol, camphor and borneol were higher in the EOs when compared to HS volatiles.

From the above mentioned it can be concluded that HS analyses could not replace the analysis of EO but could be helpful in the cases when sufficient quantities of plant material are not available or when it is necessary to analyze a single specimen of a plant species.

References:

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