

3.1 = CHEMICAL COMPOSITION OF THE ESSENTIAL OILS OF SOME TAXA OF THE GENUS *CLINOPODIUM* (LAMIACEAE) FROM SICILY

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The genus *Clinopodium* L. (*Lamiaceae*) is known for its medical uses in folk medicine and as a spice in Italian food. Recently, several taxa previously assigned to *Satureja* L. and *Calamintha* Mill. have been transferred to this genus (1). Pharmacological studies reveal, for instance, that *Calamintha nepeta* (L.) Savi [*Clinopodium nepeta* Kuntze subsp. *nepeta*], commonly known as “nepetella”, exhibits cholagogue, expectorant, sedative and antibiotic properties (2); furthermore, the essential oil of its aerial parts showed an antifungal activity (3). The apical flowering parts and leaves of *Clinopodium vulgare* L. are used in popular medicine for their carminative and emmenagogue properties (1); recently, the essential oil of its aerial parts was found to possess remarkable radical-scavenging and antioxidant activities (4). In Madeira Island, the local population uses the leaves of *Clinopodium ascendens* Samp. as a mouth freshener and to alleviate headache and toothache; furthermore, the essential oil of its aerial parts exhibited remarkable antibacterial and antifungal activities (5).

Here, the chemical composition of the essential oils of four taxa of *Clinopodium* growing wild in Sicily is reported. In particular, were investigated *Clinopodium nepeta* Kuntze subsp. *glandulosum* (Req.) Govaerts from Cava Grande (Avola, Siracusa), *Clinopodium nepeta* Kuntze subsp. *nepeta* from Cave di Cusa (Campobello di Mazzara, Trapani), *Clinopodium raimondoi* Spadaro, Faqi & Mazzola from Palermo (Fondo Patti, San Gabriele) and *Clinopodium nepeta* Kuntze subsp. *ascendens* B. Bock. from Castelbuono (Madonie, Palermo).

The essential oils, extracted by hydrodistillation according to the *European Pharmacopoeia*, were analysed by GC and CG/MS.

In the four oils, 48 compounds in all were identified: 27 for *Clinopodium nepeta* subsp. *glandulosum* (98,4% of the total oil), 19 for *Clinopodium nepeta* subsp. *nepeta* (98,6% of the oil), 26 for *Clinopodium raimondoi* (96,5% of the oil) and 38 for *Clinopodium nepeta* subsp. *ascendens* (93,5% of the oil).

In *C. nepeta* subsp. *glandulosum*, the most abundant compounds were *trans*-dihydrocarvone (36.5%), carvone (19.2%) and *cis*-dihydrocarvone (13.0%). On the whole, the oil was constituted mainly of monoterpenes (81.5%) and sesquiterpenes (13.4%). In the first fraction, oxygen-containing monoterpenes (73.4%) prevailed over monoterpene hydrocarbons (8.16%).

In *C. nepeta* subsp. *nepeta*, the main components were *cis*-piperitone oxide (39.0%), piperitenone (36.0%) and limonene (7.7%). Monoterpenes constituted the most abundant fraction of the oil (91.0%), with a prevalence of oxygen-containing monoterpenes (81.5%).

Piperitenone oxide (59%) *cis*-piperitone oxide (22.2%) and limonene (6.0%) were the main compounds of *C. raimondoi*. As in the other oils studied, monoterpenes constituted the main fraction and accounted for 90.2% of the total oil with a prevalence of oxygen-containing monoterpenes (82.4%) over monoterpene hydrocarbons (7.8%).

In *C. nepeta* subsp. *ascendens*, the main compounds were carvone (14.4%), *trans*-isopulegone (11.5%) and mint furanone (8.9%). On the whole, the main fraction was constituted of monoterpenes (81.1%). Among these, monoterpene hydrocarbons (73.4%) were the most abundant components of the oil.

In conclusion, all four oils share a high percentage of monoterpenes and a scarce amount of sesquiterpenes. Previous papers on the analysis of the essential oils of *Clinopodium* sp.pl. showed that the monoterpenes group is usually dominant, although the main component may vary.

The results of the present study concur with these findings.

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