4.3 = PRELIMINARY ESSENTIAL OILS STUDY IN THE GENUS *TEUCRIUM* FROM SARDINIA (ITALY)

ALFREDO MACCIONI[1], ARIANNA MARENGO[1], DANILO FALCONIERI[1,2], ALESSANDRA PIRAS[3], EMMANUELE FARRIS[4], GIOVANNI MARRAS[1], ANDREA MAXIA[1], CINZIA SANNA[1]
[1]Department of Live and Environment Sciences, University of Cagliari, Via Sant'Ignazio 13, 09123 Cagliari, Italy; [2]ITIS M. Giua, Via Montecassino, 09134 Cagliari, Italy; [3]Department of Chemical and Geological Sciences, University of Cagliari, Cittadella Universitaria di Monserrato, Cagliari, Italy; [4]Department of Sciences for Nature and Environmental Resources, University of Sassari, Via Piandanna 4, 07100 Sassari, Italy

Teucrium L. is a genus belonging to the Lamiaceae family, which includes 300 species distributed in Europe, North Africa and temperate parts of Asia, but mainly concentrated in the Mediterranean region (1). It occurs in Sardinia with 11 taxa (2,3,4). *Teucrium* species are generally aromatic and they have been used in folk medicine as stimulants, tonics, stomachache remedies and also antidiabetic agents (5). In Sardinian traditional medicine some *Teucrium* species are used as antiseptic, cicatrizant and to treat skin diseases (6).
As part of our ongoing investigation, the aim of the present study was to characterize and compare the essential oils obtained from six wild *Teucrium* species growing in Sardinia (Italy): *T. scorodonia* L., *T. massiliense* L., *Teucrium capitatum* ssp. *capitatum* L., *T. marum* L., *Teucrium subspinosum* Pourr. ex Willd., *Teucrium flavum* ssp. *glaucum* (Jord. & Fourr.) Ronniger. The selected taxa belong to the chamaephytes life form, except *T. scorodonia* which is a hemicryptophyte.
Flowering aerial parts of all species have been collected from different locations, air-dried, and subjected to steam distillation. Their chemical composition was analyzed by GC/FID and GC/MS.
Our results showed that *T. scorodonia*, *T. marum*, *T. subspinosum* and *T. massiliense* essential oils were rich in sesquiterpene hydrocarbons (92.2%, 58.5%, 66.1% and 45.3% respectively), while in *T. capitatum* ssp. *capitatum* and *T. flavum* ssp. *glaucum* the monoterpene hydrocarbons predominate (87.6% and 76.8% respectively). Furthermore, *T. marum* reported the presence of diterpene hydrocarbons and *T. massiliense* of non-terpenic oxygenated compounds. The main compounds in *T. scorodonia* essential oil were (E)-Caryophyllene (19.0%), α-Cubebene (14.5%) and Germacrene B (14.1%); in *T. marum*, β-Bisabolene (23.0%), β-Sesquiphellandrene (17.8%) and 3*E*-Cembrene A (14.0%); in *T. subspinosum* (*E*)-Caryophyllene (22.6%), β-Bisabolene (19.9%) and β-Sesquiphellandrene (12.9%); in *T. massiliense* 6-Methyl-3-Heptyl Acetate (23.5%), γ-Muurolene (11.0%) and (E)-β-Farnesene (8.4%); in *T. capitatum* ssp. *capitatum* Limonene (30.4%), α-Pinene (29.8%) and β-Pinene (10.0%) and in *T. flavum* ssp. *glaucum* Limonene (27.0%), α-Pinene (25.1%) and β-Pinene (15.1%). Our outcomes on *T. scorodonia* and *T. flavum* ssp. *glaucum* confirmed the results previously obtained by other authors (7,8), whereas the comparison of *T. massiliense* essential oil with bibliographic data, showed quali-quantitative differences (8). This variability could be due to environmental conditions. Focusing on *T. marum* and *T. subspinosum*, two species often confused, it is possible to appreciate a similar pattern in the chemical composition, although quantitative differences in the main compounds have been highlighted. The comparison between the essential oil of Sardinian *T. capitatum* ssp. *capitatum* and the analysis carried out by other authors (8) showed some important differences, especially regarding the amount of Limonene (30.4%), which is higher in the sample collected in Sardinia.
This preliminary work highlighted the high variability of the essential oils of the genus *Teucrium* from Sardinia. This is a first step for a future broad-spectrum research on all the Sardinian *Teucrium* species. Moreover, the subsequent goal would be to collect other Sardinian *Teucrium* species and perform cluster analysis (CA; dendrograms) in order to identify statistical differences between the species under study.

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