PROCEEDINGS BOOK

Abstracts & Full Papers

5th ISPBS

The 5th International Symposium on
Pharmaceutical and Biomedical Scienced

April 26-28, 2019

Türkiye

www.ispbs.org

TURKISH AIRLINES
A STAR ALLIANCE MEMBER

Association of Medicinal and Aromatic Plants of Mediterranean
AMAPMED
2012

ORMAN GENEL MÜDÜRLÜĞÜ
OGM
1839

adsi
Austrian Drug Screening Institute

POSTER PRESENTATION

ESSENTIAL OIL COMPOSITION OF *THYMUS VANDASII, THYMUS PANNONICUS* AND *THYMUS ATTICUS* FROM BULARIA

Antoaneta Trendafilova[1], Milka Todorova[1], Milena Nikolova[2] and Ina Aneva[2]

[1] Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences, 1113 Sofia, Bulgaria, trendaf@orgchm.bas.bg
[2] Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1113 Sofia, Bulgaria

Objective: The species of genus *Thymus* provoke substantial interest worldwide from phytochemical point of view, due to their diverse biological activities with potential for application in pharmaceutical, cosmetic and food industries. Very typical phenomenon for this genus is the chemical polymorphism, which is due both to the ecological factors and to genetic variations. Despite numerous publications on chemical content of *Thymus* species, the essential oil composition of the *Thymus* species in Bulgaria is poorly studied, or not studied at all. As a part of ongoing project, here in we report the chemical content of the essential oils of *Thymus vandasii, T. pannonicus* and *T. atticus.* **Material and Methods:** Air-dried aerial parts of *Thymus vandasii, T. pannonicus* and *T. atticus* were subjected to a micro distillation-extraction in a Likens-Nickerson apparatus for 2 hours using diethyl ether as a solvent. The obtained essential oils were analyzed by GC/MS. The individual components were identified by their RI and comparison of their mass spectra with those of NIST 14, WILEY and homemade MS databases. **Results:** The essential oils obtained from the aerial parts of *T. vandasii, T. pannonicus* and *T. atticus* were analyzed byGC/MS and 80 components in concentration more than 0.1%, representing 89.0-95.1% of the total oil were identified. It has been found that essential oils contained 5 main types of compounds – mono- and sesquiterpene hydrocarbons (MH and SH), their oxygenated derivatives (MO and SO) and aromatic compounds (AR). The results showed a significant difference in their chemical composition. Thus, oxygenated terpenoids were the main components in *T. vandasii* (69.2%) and *T. pannonicus* (69.9%). Among them, MO dominated in both samples (67.7 and 46.4%, respectively), while SO varied between 1.5 and 23.5% in *T. pannonicus* and *T. vandasii*, respectively. Geraniol was the main compound in both oils, followed by geranyl acetate (*T. pannonicus*) and linalool (*T. vandasii*). These oils differed also by the content of thymol, which was 5.4% in *T. pannonicus* and 0.5% only in *T. vandasii*. It has been found also that *T. pannonicus* oil contained relatively high amounts of elemol (8.0%). *T. atticus* essential oil displayed quite different profile and was very poor in the content of geraniol (< 1%). This oil was characterized by the presence of high amounts of aromatic compounds (24%) with thymol (8.4%) as a main one. It is worth to mention, that *T. atticus* oil contained the highest number of compounds, but none of them exceed 10%. In fact, the amounts of MH, MO and SH in this oil were almost equal. However, β-myrcene, thymol, germacrene D, caryophyllene oxide were the main components in this oil. **Conclusion:** This is the first report on volatile components in *T. vandasii*, as well as in *T. pannonicus* and *T. atticus*, collected from native populations in Bulgaria. The significant variety in chemical composition of the studied species required further investigations in order to complete the information on the relationship between the species in the genus *Thymus*, growing in Bulgaria.

Keywords: *Thymus vandasii, T. pannonicus, T. atticus* essential oil, GC/MS.

Acknowledgements: This work was supported by the NSF, Ministry of Education and Science, Bulgaria, Project DN 16/3.

ISPBS-5 PROCEEDINGS BOOK

POSTER PRESENTATION

VOLATILE CONSTITUENTS OF *INULA GERMANICA* L. AND *INULA BIFRONS* L. AERIAL PARTS

Antoaneta Trendafilova[1], Milka Todorova[1], Ina Aneva[4], Temel Ozek[2,3], Gulmira Ozek[2]

[1] *Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences, 1113 Sofia, Bulgaria, trendaf@orgchm.bas.bg*
[2] *Department of Pharmacognosy, Faculty of Pharmacy, Anadolu University, 26470 Eskişehir, Turkey*
[3] *Medicinal Plant, Drug and Scientific Research Center (AUBIBAM), Anadolu University, 26470 Eskişehir, Turkey*
[4] *Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1113 Sofia, Bulgaria*

Objective: Continuing our study on *Inula* species distributed in Bulgaria we have focused our attention on the chemical composition of essential oils obtained from aerial parts of *Inula germanica* L. and *Inula bifrons* L. To the best of our knowledge, the volatile constituents of these species have not been studied yet. **Material and Methods:** *Inula germanica* L. and *Inula bifrons* L. were collected from Belasitza and Rhodopes Mountains (Bulgaria), respectively. Air-dried plant material was subjected to a micro distillation-extraction in a Likens-Nickerson apparatus for 3 hours using diethyl ether as a solvent. The obtained essential oils were analyzed by GC-FID/MS. The individual components were identified by their RI and comparison of their mass spectra with those of NIST 14, WILEY and homemade MS databases. **Results:** The essential oils obtained from the aerial parts of *I. germanica* and *I. bifrons* were analyzed by GC-FID/MS and 140 components in concentration more than 0.1%, representing 98.3 and 97.6 % of the total oil were registered. It has been found that essential oils differed significantly in their chemical composition. Thus, *I. germanica* essential oil was rich in monoterpenoids (54.7%), while sesquiterpenoids dominated in *I. bifrons* essential oil (62.6%). Oxygenated monoterpenoids were dominating in *I. germanica* (53.5 %) with *cis*-carvyl acetate (20.7%) and 1,8-cineole (14.5%) as main components. The absence of monoterpene hydrocarbons and relatively low concentration of O-containing monoterpenes (1.8%) was characteristic feature for *I. bifrons* oil. In contrary, *I. bifrons* oil was found to be rich in sesquiterpene hydrocarbons (34.8 %) and O-containing sesquiterpenoids (27.8%). Among them, muurola-4,10(14)dien-1-ol (8.6%), δ-cadinene (7.7%), α- copaene (6.0%), β-selinene (5.9%) and Z-β-farnesene (5.8%) were the principal components. Significant amounts of fatty acids (12.3%) were also detected in *I. bifrons* oil, of which octanoic and tetradecanoic acids dominated. **Conclusion:** This is the first report on volatile components in *I. germanica* and *I. bifrons* aerial parts. The significant variety in chemical composition of the studied species required further investigations in order to complete the information on the relationship between the species in the genus *Inula*, growing in Bulgaria.

Keywords: *I. germanica* L., *I. bifrons* L., essential oil, GC-FID/MS.

Acknowledgements: This work was supported by the NSF, Ministry of Education and Science, Bulgaria, Project DN 09/11.

ISPBS-5 PROCEEDINGS BOOK