THE CHEMICAL PROFILE OF BASIL BIO-VARIETIES AND ITS IMPLICATION ON THE BIOLOGICAL ACTIVITY

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Introduction: Basil (*Ocimum basilicum L.)* is intensively used as culinary item for its flavoring qualities and also it is a well known principle in Romanian traditional medicine. It is used especially for treating gastrointestinal and respiratory malfunctions. On the other hand, Tulsi (*Ocimum sanctum L.*) is an ayurvedic principle recommended for the treatment of bronchitis, bronchial asthma, malaria, diarrhea, dysentery, skin diseases, arthritis and fever.

Material and methods: The analyses were performed on the essential oils and the hidroalcoholic (50 %) extracts from *O. basilicum* (Ob), *O. basilicum var. rubrum* (Obr) *and O. sanctum* (Os), included in biocultures from Romania (Biological Research Center *"Stejarul"* Piatra Neamt).The volatile fractions isolated by steam distillation in Neo-Clevenger apparatus were analyzed using gas chromatography (GS-MS). The polyphenols were determined using Folin-Ciocalteu method. A high performance liquid chromatography (HPLC-MS) was used to identify the main compounds. In addition, the antioxidant capacity was investigated by two tests: scavenger of DPPH (2,2-diphenyl-1-picrylhydrazyl) radicals and pherozine chelating activity.

Results: As expected, the GS-MS analysis showed that there were qualitative differences between the three types of isolated volatile oils. From the total amount of compounds, we selected for all samples only the main 42 substances that could be identified. A few were found in all the essential oils: linalool, camphor, β-elemene, epi-bicyclosesquiphelandrene, β-cariophilene, l-α-bergamotene. The highest quantities were recorded for linalool that were between 19.25 % (Os) and 66.72% (Obr). Still, important compounds, such as 1,8-cineole, estragole, eugenole and trans-beta-ocimene, were missing in the *O. basilicum var. rubrum* sample. The phenolic derivatives profile established by HPLC for all three samples included rosmarinic acid, capheic acid, chlorogenic acid and galic acid. As for the flavonoids, catechine, rutoside, apigenin-7-glucoside, luteoline and apigenine were the common compounds, identified in all the samples. The antioxidant test results were correlated to the chemical composition with differences between the samples.The best scavenger activity was noted for Obr sample with IC50 (inhibbitory concentration) value of 0.8 mg/mL.

Conclusion: All in all, the results state once again that *O. sanctum* has a different chemical profile and, therefore, should not be substituted by *O. basilicum* in food supplements. Also, as a surprise, the ethanolic extracts of *O. basilicum* var. *rubrum* could succesfully be used as antioxidant source.

Keywords: Basil, antioxidant activity, HPLC, GS-MS.