Use of Aromatic Medicinal Plants By-products for the Development of Beverages with Beneficial Properties - Abstract

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Summary

During the processing of cultivated aromatic medicinal plants for their commercial use, a great number of inferior b'-quality products and by-products is obtained, which although until now are treated as "waste", they are rich in bioactive natural products with beneficial properties on human health. After a bibliographical research about the uses, the biological properties and the chemical content of plant species with significant amount of by-products, a number of herbs was further investigated for the development of beverages with slimming and relaxing activity and for the stimulation of immune system. The selected species for their slimming properties were *Camellia sinensis* and *Aloysia citrodora* and for their relaxing properties *Tilia cordata*, *Matricaria recutita*, *Melissa officinalis* and *Passiflora incarnata*. Also, for the stimulation of immune system, *Origanum dictamnus*, *Sideritis* sp., *Cistus creticus* and *Echinacea purpurea* were chosen. Techniques of infusion and water decoction were used for the preparation of extracts, in different proportions of mixing plant materials and solvent, for the three beverage categories. The methanolic extracts were, also, prepared in order to characterize the quality of the raw materials and to correlate their composition with the properties of the final products. All the extracts derived from infusion and water decoction were evaluated for their chemical profile (HPTLC technique), antioxidant capacity (DPPH free radical scavenging method) and their total phenolic content **(**Folin–Ciocalteu method). Then, the different mixtures were evaluated for their organoleptic characteristics (smell, taste, colour) for the selection of the final plant materials to be used for the development of the final beverages. The technique of infusion was selected, compared with water decoction, as the most suitable for the preparation of all the final beverages. After tests for the improvement of taste and smell, the composition of the final products was as follows: The beverage with slimming activity is a mixture of *Camellia sinensis* and *Aloysia citrodora* (1:1) with the addition of maltodextrin in specific quantity, the beverage with relaxing properties is a mixture of *Tilia cordata*, *Matricaria recutita*, *Melissa officinalis*, *Passiflora incarnata* (1:1:1:1) and the beverage for the stimulation of immune system is a mixture of *Sideritis* sp., *Origanum dictamnus*, *Cistus creticus*, *Echinacea purpurea* (1.5:0.5:1:1). Hence, the preparation of the three beverages through the utilization of plant material by-products, that are not commercially accepted, highlighted to develop novel products with benefits for human health and economic value can through the exploitation of aromatic medicinal plants by-products.

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