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P12 - CAFFEOYLQUINIC ACIDS AND SESQUITERPENE LACTONES ACCUMULATION IN *INULA BRITANNICA IN VITRO*

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Inula britannica L., Asteraceae, is a medicinal plant, known in Traditional Chinese and Kampo medicinal practices. It is applied for phlegm removal in pulmonary ailments, as a tonic and a warming agent. Research has shown the presence of sesquiterpene lactones and flavonoids in aerials of the plant, and provided evidence for the anticancer, anti-inflammatory and neuroprotective potential of different preparations of the plant.
The production of different caffeoylquinic acid (CQA) derivatives, as well as sesquiterpene lactones has been studied in a model system of shoot cultures of the plant. The combined effect of Murashige and Skoog (MS) vs. Gamborg (G5) vitamins with low (0.2 mg/l) and high (0.7 mg/l) concentrations of benzyl adenine (BA) applied alone or in combination with 0.1 mg/l naphthylacetic acid (NAA) were studied. The content of caffeoylquinic acids (CQA) was studied by means of HPLC analysis of the methanol extract and sesquiterpene lactones content was studied by means of GS/MS chromatorgraphy of the chloroform extract of the plant material.
Highest CQA production was achieved in MS supplemented media which were plant growth regulators (PGR)-free or where 0.2 mg/l BA was applied alone. In these treatments the slowest growth and lowest morphological changes were observed. Intensive biomass production and callus formation in 0.7 mg/l BA treatment led to the lowest production of these compounds. G5 vitamins were shown to be favorable regarding total sesquiterpene lactone production, as compared with MS ones; however the stimulation of biomass formation by PGR treatments led to lowering of the levels of sesquiterpene lactones regardless of the vitamin supplementation.

The relations between plant growth and morphogenesis and secondary metabolite production in the plant could be used as a tool to affect the biotechnological production of potential phytopharmaceuticals by optimization of its indigenous biosynthetic capacity without the application of genetic transformations.

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P46 - ESSENTIAL OIL FROM *PISTACIA LENTISCUS* L. FRUIT CAKE – A NEW APPROACH FOR UTILIZATION OF WASTE FROM EDIBLE OIL PRODUCTION

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The *Pistacia lentiscus* L. is an evergreen member of the Anacardiaceae family consisting of nine species and five subspecies[1]. It is largely distributed in the Mediterranean basin Tunisia, Algeria, Morocco, Spain, France, Italy, Greece and Turkey. This plant is widely used in folk medicine to treat various diseases (hypertension, ulcer, eczema and diarrhea) as well as to flavor and conserve diverse aliments[2]. The essential oil extracted from the aerial parts of *P. lentiscus* L. exhibited appreciable antibacterial, antifungal and insecticidal activities[3]. *P. lentiscus* L. fruit is a source of edible oil, containing a considerable amount of unsaturated fatty acids, carotenoids and tocopherols, natural antioxidants and essential fatty acids. The residue obtained from *P. lentiscus* L fruit after the oil extraction by cold pressing is generally thrown out in the nature. Therefore, the recovery of valuable biologically active substances is an approach to reduce and to valorize the waste generated in the oil industry.

The aim of this study was to prepare essential oil from the *P. lentiscus* L fruit cake and to compare it with those obtained from fruits and leaves of *P. lentiscus* L. The oil cake, fruit and leaves were subjected to a micro distillation-extraction in a Likens-Nickerson apparatus for 2.5 hours using diethyl ether as a solvent. The resulting essential oils were analyzed by GC/MS and more than 60 components in concentration at least 0.1%, representing 98.3, 96.7 and 96.8 % of the total oil were registered. The individual components were identified by their RI and comparison of their mass spectra with those of NIST 14 and homemade MS databases. It has been found that essential oils prepared from fruit and fruit oil cake contained significant amounts of monoterpene hydrocarbons (57-47%) and fatty acids (20.5-30.7%), while the leaf essential oil was found to be rich in oxygenated sesquiterpenoids.

The hydrodistillation of fruit cake is an eco-friendly method producing essential oil rich extract without the risks of solvent contamination and most suitable for any healthy product preparation.

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