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B027 Identification and quantification of main components of *Chamomilla recutita* (L.) Rauschert oily extracts

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The composition of *Chamomilla recutita* (L.) (i) extracts obtained by polar solvents (water, ethanol) is well investigated. They contain flavonoids, coumarins, sesquiterpene lactones as precursors of chamazulene, etc. However, extracts of (i) obtained by non-polar natural plant fixed oils (soya, olive, etc.) are significantly enriched by more hydrophobic components.

The main constituents of the volatile fraction of (i) oily extracts were identified by their mass spectra and GC retention indices on standard non-polar phases. They are two isomeric (E) and (Z)-2-[2,4-hexa-di-yn-yl]-1,6-dioxaspiro-[4.4]-non-3-enes (**1**, C₁₃H₁₂O₂, MW 200, trivial name "en-yn-dicycloethers") known since the beginning of 1960s. Non-volatile fraction of (i) oily extracts contains minor quantities of coumarins and flavonoids, but the major component which has been isolated by preparative HPLC and characterized by mass, UV-spectra and LC retention indices was identified as posthumulone (**2**, C₁₉H₂₆O₅, MW 334),:



The presence of compounds of humulone and lupulone series (so-called bitter α - and β -acids) is considered as typical only for hop extracts and has never been reported previously for chamomile, where they prevail over other compounds only in extracts obtained by non-polar solvents like natural plant fixed oils.

Acknowledgements: This work was supported by Moscow pharmaceutical factory.

B028 Substances in *Echinacea pallida* root; variation due to extraction proceduresTorun Helene Aslaksen Liljebäck^a, Hilde Barsett^a and Terje E. Michaelsen^b

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The genus *Echinacea* is a member of the daisy family (Asteraceae). The three most common species are purple coneflower (*Echinacea purpurea*), narrowed-leaved purple coneflower (*E. angustifolia*) and pale purple coneflower (*E. pallida*). All three have a long history of medicinal use, both in the United States and Europe. They are commercially important sources of phytopharmaceuticals and other medicinal preparations, and are widely used for self-medication of mild respiratory infections. Ethanolic or aqueous extracts and liquors obtained by pressing are derived from the root (radix) as well from the herbal parts (herba) of the plants. The chemistry of some of the *Echinacea* species is well documented (1). The extracts contain varying concentrations of flavonoids, essential oils, polysaccharides, derivatives of caffeic acid, polyacetylenes, alkamides and alkaloids, and several components give stimulation of the non specific immune system.

The aim of the investigation presented, is to show the relationship between content of low and high molecular weight substances in different extracts of *E. pallida* root.

The low molecular weight substances were analysed by TLC and the high molecular weight (polysaccharides) by methanolysis followed by trimethylsilylation and GC. To investigate the biological activity, tests for radical scavenging and complement fixing ability were used. The fractions capability to precipitate Yariv antigen, were also tested. The different extraction procedures gave varying amounts of derivatives of caffeic acid, including echinacosid. These compounds were radical scavengers, but were inactive in the complement fixing test. The different extraction procedures also gave variations in the carbohydrate content and composition. Several of the high molecular weight fractions showed high biological activity in the complement test system.

References: 1. R. Bauer (1996), Z. Ärtzl. Fortbild 90: 111-115.