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GC-MS Analysis of *Rosmarinus officinalis* L. Leaves and Infusion

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The essential oil and infusion of *Rosmarinus officinalis* L. leaves have been commonly used in traditional medicine. Nowadays they are subject of extensive research concerning their antimicrobial, antiviral, antioxidativ and antifugal properties [1].

This paper presents the qualitative and quantitative composition of *R. officinalis* leaves essential oil isolated by steam distillation and of the volatile compounds of *R. officinalis* leaves infusion. The essential oil compounds of the infusion were isolated by steam distillation as well as by solid phase extraction (SPE) on octadecylsilane endcapped C18 (EC) cartridges and eluted with methylene chloride. The essential oil in hexane and the SPE-infusion extract in methylene chloride were analyzed by gaschromatography coupled with mass spectrometry. All the quantitative and qualitative results are mainly discussed regarding the components which typically exist in the essential oil obtained by steam distillation. The essential oil yield was 1.8% g/v. Thirty-seven compounds representing 97.4% of the oil were identified. The main constituents were 1,8 cineole (41.6%), camphor (17.0%), α -pinene (9.9%), α -terpineol (4.9%) and borneol (4.8%). The proportions of chemical functionalities in the essential oil were: hydrocarbons 23.3%, oxides 42.1%, alcohols 13.2%, aldehydes/ketones 17.9% and esters 0.8%. The qualitative and quantitative examination of *R. officinalis* infusion showed that there were no major differences between hydrodistillation and SPE. The main constituents of *R. officinalis* infusion were (hydrodistillation/SPE): 1,8-cineole (42.2%/44.8%), camphor (31.4%/31.8%), α -terpineol (8.7%/8.0%) and borneol (8.4%/7.8%). The relative proportions of the constituents differ from those of the essential oil from the original leaves and were found as follows (steam distillation/SPE): hydrocarbons 0.7%/0.5%, oxides 42.2%/44.8%, alcohols 22.7%/19.6%, aldehydes/ketones 32.5%/33.4% and esters 0.4%/0.6%.

- [1] Barnes J, Anderson LA, Phillipson JD. Herbal Medicines. Third Edition. London: Pharmaceutical Press, 2007: 508–511.