Studies on Components of Essential Oil and the Antioxidant Abilities of Three Varieties Rosemary Planted in Taiwan

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ABSTRACT

There are many flavorful compounds in aromatic plants. This study is can be divided into two parts. In the first part of this study, the essential oil of three varieties of rosemary harvested at different seasons in Taiwan was obtained by the steam distillation and the Likens-Nickerson steam distillation solvent extraction methods. Volatile composition and the antioxidant abilities of the essential oil and the methanol extract of dried leaves of rosemary were also studied. The yield of essential oil was influenced with harvested seasons and extraction methods. The yield of essential oil obtained from fresh rosemary leaves by Likens-Nickerson steam distillation solvent extraction method was found higher than that using traditional steam distillation method. All of the essential oil obtained was analyzed by using the gas chromatographer coupled with mass spectrometer. The major compounds identified in the essential oil of R. o. “ Beneuden Blue ” were alpha-pinene, 1,8-cineole, camphor, camphene, endo-borneol, beta-pinene, endobornyl acetate, beta-caryophyllene, gamma-terpinene, alpha-terpineol, alpha-phellandrene, delta-3-carene, alpha-terpinene, myrcene, alpha-terpinolene, and 4-terpineol. The major compounds identified in the essential oil of Rosmarinus officinalis were 1,8-cineole, alpha-pinene, camphene, geraniol, trans-caryophyllene, endo-borneol, camphor, endobornyl acetate, linalool, beta-pinene, alpha-terpinolene, myrcene, chrysanthenone, gamma-terpinene, alpha-terpineol, verbenone, 4-terpineol, terpinolene, verbenene, alpha-humulene, and pinocarvone. The major compounds identified in the essential oil of R.o. “ Pink ” were camphor, 1,8-cineole, alpha-pinene, endo-borneol, camphene, beta-pinene, endobornyl acetate, alpha-terpineol, trans-caryophyllene, gamma-terpinene, linalool, pinocarvone, 4-terpineol, myrcene, nopol, alpha-fenchyl acetate, delta-cadinene, myrtenol, alpha-copaene, beta-caryophllene, alpha-terpinene. In the second part of this study, the antioxidant abilities of three varieties of rosemary harvested at summer season in Taiwan were studied. In the study of DPPH free radical scavenging effect and the reducing power test similar results were found that the methanol extract of de-essential oil dried rosemary leaves was stronger than that the methanol extract of dried rosemary leaves and the fresh rosemary leaf essential oil. But in the superoxide anion scavenging ability, the methanol extract of de-essential oil dried rosemary leaves was stronger than the methanol extract of dried rosemary leaves. The leaf essential oil of rosemary was found to not have the superoxide anion scavenging ability and probably have the promotion effect.

Keywords : rosemary ; essential oil ; antioxidant

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