



Esterification of *Rosmarinus officinalis* L. (Rosemary) essential oil

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Keywords: *Rosmarinus officinalis*, essential oil, esterification.

Essential oils are an important raw material for many industries as food, pharmaceuticals, cosmetics and perfumery, where they can be used in the natural or synthetically modified way. One of the most common transformations employed by these industries is the esterification that aims the production of esters from the alcohols presents in the essential oil. This kind of reaction can modify the aroma profile of the essential oil. *Rosmarinus officinalis*, popularly known as “rosemary”, is a perennial herb from Lamiaceae family (1). It is very used in food and drink preparations and it has many interesting properties such as antimicrobial and antioxidant activities, which makes it a good conservative for human consumer products in general. The essential oil of rosemary, generally isolated by hydrodistillation, is mainly composed by monoterpenes, oxygenated monoterpenes and, in the lesser proportion, by sesquiterpenes. Its aroma is strong and pleasant, remitting to herb, spice or pine wood. The major constituents are camphor, 1,8-cineole, α -pinene and myrcene (2,3). Fresh samples were bought in a market in Rio de Janeiro - RJ, Brazil. Leaves were separated in three portions (c.a. 176 g) and each one was subjected to hydrodistillation in a Clevenger-type apparatus for 3 h. The esterification reaction was carried out using essential oil/acetic anhydride/sodium acetate (2:1:0.1) for 2 h at 100 °C. Analyzes were performed by GC-MS (Agilent 6850) and GC-FID (Agilent 6890N) systems both with a HP-5MS (30 m X 0.25 mm X 0.25 μ m) capillary column. Helium and hydrogen were used as carrier gases of these systems with a flow rate of 1.0 mL/min and 1.2 mL/min, respectively. Oven temperature was raised from 50 to 180 °C at 3 °C/min and the injection was made at 220 °C for 0.20 min in splitless mode. Mass detector was operated in electronic ionization mode at 70 eV. The percentage composition was obtained by normalization from FID. The identification of the components of the natural and modified essential oil were carried out by comparison of mass spectra data with NIST 14 and Willey 275 libraries, and also, by the calculated and literature linear retention indices. The average yield was 0.5 % and the alcohols correspond to 7.5 % of this total. The major compounds identified were camphor (28.4 %), 1,8-cineole (15.0 %) and α -pinene (12.5 %). Among principal alcohols are α -terpineol (1.9 %), terpinen-4-ol (1.1 %), borneol (1.4 %) and linalool (0.8 %). Only one ester was identified in natural essential oil: bornyl acetate (0.46 %). After the reaction, it were identified the following esters: 1-octen-3-yl acetate (0.6 %), isopulegol acetate (0.3 %), myrtenyl acetate (0.5 %) and, besides the bornyl acetate (3.1 %). The aroma profile of the oil changed with the esterification reaction and got a more light and woody odor.

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Acknowledgements: CAPES, CNPq and Faperj.