



## Essential oil rectification for two *Lippia origanoides* chemotypes (thymol and carvacrol): obtaining reproducible fractions from different initial concentrations

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Keywords: *Lippia origanoides*, essential oil, thymol, carvacrol, rectification, fractional distillation.

Widely known natural sources of thymol and carvacrol are thyme (*Thymus vulgaris*) and oregano (*Origanum vulgare*), both of Eurasian origin. The thymol and carvacrol contents in these essential oils (EO) are: 37-55 % and 0.5-5.5 %, respectively, for thyme (ISO 14715:2010) and around 22 % and 18 %, respectively, for oregano (1). The EO of some native American species have an important content of thymol and carvacrol. This is the case of *Lippia origanoides* (LO), a species for which several chemotypes have been found. Two of them afford essential oils rich in either thymol or carvacrol. Different agricultural conditions and post-harvest treatments cause variations in EO composition. The relative amount of carvacrol in the EO of the LO carvacrol-rich chemotype varies between 44.8 and 52 % (2). Similarly, thymol content EO chemotype is 53-61 % (3). The present work studies LO EO rectification to obtain reproducible and enriched fractions of thymol and carvacrol. The EOs were obtained by hydrodistillation and rectification was carried out in a B/R Instrument 800, a reduced- pressure fractional distillation equipment that uses a rotating B/R instruments, Easton, MD, USA). Reproducibility experiments were performed to standardize the rectification method. The effect of pressure on fraction composition was studied. The EO and fractions were analyzed by gas chromatography with mass- selective detection and with flame ionization detection (Agilent Technologies 6890 GC, and MSD 5973, Palo Alto, California, USA). Pressure and initial composition of EO had a significant effect on the rectification of thymol and carvacrol enriched fractions. Reproducible compositions (mass fraction) of fractions enriched in thymol (0.62-0.81), or carvacrol (0.52- 0.62) was achieved depending on the initial composition and pressure. Two models were fitted to the experimental data for each EO. Cross validation was used as a warranty from fitting the model. The results of this work are the beginning of the EO rectification process escalation of promising natural compounds from Colombian native plants.

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Acknowledgements: Patrimonio Autónomo Fondo Nacional de Financiamiento para la Ciencia, la Tecnología y la Innovación, Francisco José de Caldas, Contrato RC-0572-2012.