

Abstract

Sage Essential Oils: Chemical Characterization and Evaluation of the Antioxidant Activity of Commercial Samples [†]

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Abstract: The essential oil of *Salvia officinalis*, an aromatic plant belonging to the Lamiaceae family, is very useful in the pharmaceutical, food and cosmetics industries due to its biological properties, which have anti-inflammatory, antioxidant and antimicrobial effects. The present work aims to optimize the extraction of essential oils from commercial samples using an experimental design with two independent variables, the solid/liquid ratio (w/v) and time, followed by an evaluation of the response variables, yield and antioxidant activity. A chemical characterization of the oils was also carried out. For this, the material obtained from local stores in the city of Rio de Janeiro was subjected to hydrodistillation in a *Clevenger* apparatus, and the identification and quantification of the compounds in the isolated oil were carried out using GC/MS. The antioxidant capacity was determined by calculating the percentage inhibition of the DPPH• radical, resulting in a variation between 8.7 and 28.3% inhibition. The results show that the number of compounds identified and their respective chemical classes have an impact on the difference in the percentage of inhibition of the radical due to their particular properties. In this work, we chose to evaluate the experiments that presented the best and worst responses in the experimental design, which were obtained in the following conditions: the solid/liquid ratio was 1:14 (w/v) for 180 min and 1:50 (w/v) for 60 min, respectively. The first condition showed the best results, which may be associated with a higher concentration of sesquiterpenes, highlighting β -caryophyllene, which has recognized antioxidant and anti-inflammatory effects. It can therefore be concluded that sage essential oil has significant bioactive properties; however, the differences in extraction conditions have a direct influence on antioxidant activity, since during the process, the conditions applied can lead to the loss of important volatile compounds.

Keywords: sage; essential oil; sesquiterpenes; experimental design; GC/MS



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