

Phytochemical profile and antioxidant activity of essential oils from *Piper regnelli* and *Piper xylosteoides*

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Introduction

Medicinal plants for the treatment of various diseases have been widely used since ancient times, constituting a range of bioactive compounds, with great importance for chemical research and discovery of new drugs for the use of agents in therapeutics (1). Piperaceae family encompassing 12 genera and approximately 3700 species and are widely distributed in tropical and subtropical regions (2). One of the secondary metabolites in this genus are the essential oils that have been the target in search for new substances with antioxidant action. This study aimed the chemical characterization and antioxidant activity of the essential oil from *Piper regnelli* and *Piper xylosteoides* from Rio Grande do Sul.

Experimental section

The essential oils were obtained from crushed fresh samples by hydrodistillation in Clevenger apparatus for 4 hours. The chemical analysis was carried out by gas chromatography coupled to mass spectrometry (GC/MS). The identification of the constituents was based by comparison of both retention indices and mass spectra with authentic samples and data from literature (3). The protection of lipid peroxidation was evaluated by measuring the substances reactive to thiobarbituric acid method (TBARS). Samples of essential oils were tested at concentrations from 100 to 500 µg/mL using the BHT as positive control.

Results and Discussion

The essential oils obtained from *P. regnelli* and *P. xylosteoides* showed an average yield of 0.6±0.1% and 0.3±0.03%, respectively. Chemical composition of the essential oils demonstrated the predominance of apiole (69.2%) and dillapiole (15.4%) for *P. regnelli* and bicyclogermacrene (51.2%) and spathulenol (18.4%) for *P. xylosteoides*. In the antioxidant activity, the results showed that the samples tested at concentration of 500 µg/mL, showed an inhibition profile with 20.0% and 25.6% for *P. regnelli* and *P. xylosteoides*, respectively. Studies report that the compounds apiole and dillapiole are responsible for the biological activities attributed to *Piper* species, justifying the inhibition activity in *P. regnelli* (4). Bicyclogermacrene associated in lower proportions with spathulenol for example, may exhibit antioxidant activity observed in *P. xylosteoides* (5).

Conclusions

Therefore, the data presented in this study, showed apiol and dillapiole-rich essential oil as expected for some *Piper* species, as well as the presence of some sesquiterpenes, such as bicyclogermacrene, corroborating the pattern of compounds found in this genus. The antioxidant potential of essential oils was also determined and contribute with effective alternatives regarding the use of medicinal plants.

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