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PRELIMINARY STUDY OF COMPOSITION AND ANTIBACTERIAL ACTIVITY OF ESSENTIAL OIL FROM *Protium heptaphyllum*, *Hedyosmum brasiliense*, *Blepharocalyx salicifolius*, *Baccharis dracunculifolia* AND *Nectandra megapotamica*

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Abstract: Essential oils show significant antimicrobial properties against a broad spectrum of Gram-positive and Gram-negative bacteria [1]. There is great interest in plants with antimicrobial properties due to problems associated with intermittent use of antibiotics, especially those related to resistance of some strains of microorganisms against several drugs [2]. Thus, antimicrobial agents derived from plants, can lead to the development of new drugs clinically important [3]. *Protium heptaphyllum*, *Hedyosmum brasiliense*, *Blepharocalyx salicifolius*, *Baccharis dracunculifolia* and *Nectandra megapotamica* could have potential antimicrobial, whereas these species and other of the same family and genus have proven antimicrobial activity against some microorganisms. These species have presented in their chemical constitution mainly terpenoids, class of compounds which are generally active against microorganisms and constituents of essential oils. To check in a preliminary way the antimicrobial activity of these species, were chose strains resistant and non-resistant of *Staphylococcus aureus*, a bacteria of great clinical importance. Leaves from all plants were collected in Botucatu; essential oils were extracted by drag of steam and their chemical compositions were determined by gas chromatography-mass spectrometry (GC-MS). The identification of each constituent was carried out by comparing the mass spectrum obtained with those stored in the software libraries and, also by comparing the calculated arithmetic index with the arithmetic indexes reported in the literature. The antimicrobial activity was determined by the broth microdilution through the minimal inhibitory concentration (MIC), with ATCC strains and clinical isolates of methicillin-resistant *Staphylococcus aureus* (MRSA) and methicillin-sensitive *Staphylococcus aureus* (MSSA). The antimicrobial activity of the essential oils, the yields and the major compounds are shown in Table 1. The essential oil from *B. salicifolius* presented the highest yield. Comparing the essential oils, it is possible to observe similarities between the profile of major compounds, however, the biological effect varied depending on the combination of these compounds and the type of strain, resistant or non-resistant. The next step is to investigate these compounds in various combinations to achieve the best antimicrobial effect and to identify possible synergistic effects.

Table 1. Inhibitory effect on the growth of methicillin-resistant *Staphylococcus aureus* (MRSA) and methicillin-sensitive *Staphylococcus aureus* (MSSA) (MIC, mg/mL), yields (mg/g) and major compounds of the essential oils.

MIC 90% (mg/mL)	MRSA	MSSA	Yield (mg/g)	Major compounds
P. heptaphyllum	9.30	>10.00	2.01 ± 0.14	alpha-Phellandrene;Isoterpinolene;E-Caryophyllene;D-Germancrene
H. brasiliense	4.42	9.42	0.58 ± 0.06	D-Germancrene;Bicyclogermancrene
B. salicifolius	4.12	2.35	8.41 ± 1.04	Bicyclogermancrene;E-Caryophyllene
B. dracunculifolia	4.42	8.83	3.82 ± 0.10	trans-Nerolidol;Bicyclogermancrene;D-Germancrene
N. megapotamica	9.30	9.42	1.13 ± 0.09	Bicyclogermacrene;β-Pinene;alpha-Pinene

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