

## Chemical composition and antimicrobial activity of essential oil from the leaves of *Anaxagorea brevipes* Benth

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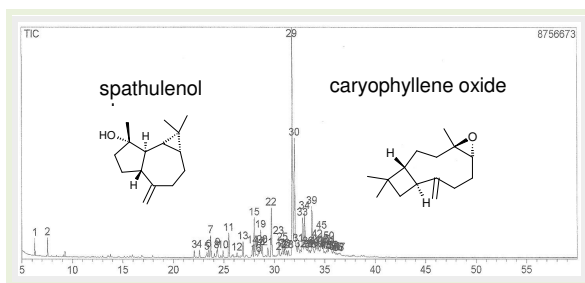
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### Introduction

Essential oils have been of great interest as natural product. They have been screened for their potential uses as alternative in the treatment of many infectious diseases.<sup>1</sup> The genus *Anaxagorea* A. St.-Hil. belongs to Annonaceae family and comprises approximately 30 species with pantropical distribution (America and Asia). Plants of this genus have previously yielded aporphine alkaloids, fatty acids, polyphenols, cyanogenic glucosides, neolignans and steroid.<sup>2</sup> Aiming to enrich the scientific knowledge of plants found in the Amazon with few studies, this work was proposed to determine the chemical composition and antimicrobial activity of the essential oil from the leaves of *A. brevipes*.

### Results and Discussion

The leaves of *A. brevipes* were collected on the campus of the Universidade Federal do Amazonas (UFAM) and submitted to the extraction of essential oil by hydrodistillation for 4h. The components were quantified by GC-FID and identified by GC-MS. The retention indices and mass spectra were compared with data of electronic libraries (NIST 12, NIST 62 and WILEY 139) and literature.<sup>3</sup> The essential oil was tested against two Gram-positive and three Gram-negative by determining the minimum inhibitory concentration (MIC) using microdilution plates.



**Figure 1.** GC-EM chromatogram of the essential oil from the leaves of *Anaxagorea brevipes*.

Through the analysis by GC-FID and GC-MS were identified 57 compounds (Figure 1). The chemical

profile of the essential oil showed a high proportion of oxygenated sesquiterpenes, due to the presence of major constituents spathulenol (19.1%) and caryophyllene oxide (13.0%) (Table 1). The best result of the antimicrobial was to Gram-positive bacterium *Enterococcus faecalis* (ATCC 29212) with a MIC value of 620 µg.mL<sup>-1</sup>.

**Table 1.** Major compounds of the essential oils from the leaves of *Anaxagorea brevipes*.

Substance	RI cal	RI lit	leaves
γ-murolene	1478	1478	3.3 ± 0,3
δ-cadinene	1521	1522	4.0 ± 0,2
spathulenol	1574	1577	<b>19.1 ± 0,0</b>
caryophyllene oxide	1580	1582	<b>13.0 ± 0,1</b>
guaial	1599	1600	3.9 ± 0,0
humulene epoxide II	1605	1608	5.4 ± 0,0
1-epi-cubenol	1625	1627	5.6 ± 0,3
epi-α-murolol	1638	1640	2.1 ± 0,0
α-eudesmol	1650	1652	4.1 ± 0,1
cadalene	1670	1675	2.3 ± 0,0
<b>Monoterpene hydrocarbons</b>			<b>0.6</b>
<b>Sesquiterpene hydrocarbons</b>			<b>26.2</b>
<b>Oxygenated sesquiterpene</b>			<b>72.0</b>
<b>Total identified</b>			<b>98.8</b>

### Conclusions

Composition studies of essential oils of several species of Annonaceae family has shown the spathulenol and caryophyllene oxide as predominant chemical constituents for species of *Duguetia*, *Gutteria* and *Xylopi* genus. It is possible that these constituents are also common in the *Anaxagorea* but to confirm it is necessary to study the composition of other oils of the same genus.

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