

**Circadian rhythm of a 1,8-Cineole chemotype essential oil of *Calycolpus goetheanus* from Marajó island, Brazilian Amazon**

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*Calycolpus goetheanus* (Mart. ex DC.) O.Berg (syn. *Calycolpus glaber* (Benth.) O.Berg, *C. ovalifolius* O.Berg, *C. schomburgkianus* O.Berg, *C. angustifolius* L.Riley, *C. cordatus* L.Riley, *Campomanesia goetheana* O.Berg ex Hemsl., *Campomanesia glabra* Benth., *Myrtus goetheana* Mart. ex DC., *Eugenia maranhaoensis* G.Don), commonly known as Goiaba-araçá, is a native but not endemic species from Brazil, occurring in the Brazilian Amazon (Pará and Amazônas states) and in the Cerrado (Maranhão state), Brazil [1]. The aim of the present work was to evaluate the circadian rhythm influence in the yield and chemical composition of the essential oil of *Calycolpus goetheanus*. The essential oils were obtained by Hidrodistillation and their chemical compositions were analyzed by GC-MS. In the Circadian rhythm, the essential oils yields were 2.3% (6 a.m.), 1.8 % (9 a.m.), 2.0 % (12 a.m.), 2.2 % (3 p.m.), 2.0 % (6 p.m.), and 2.3 % (9 p.m.). Thus, the oil yields were  $2.1 \pm 0.2\%$  all day long, showing low positive correlation with the climate parameters (humidity, solar radiation, temperature). The contents of the oxygenated monoterpene 1,8-Cineole, the major constituent during the circadian rhythm, were 14.5% (6 a.m.), 14.8% (9 a.m.), 15.4%, (12 a.m.), 15.1% (3 p.m.), 18.7% (6 p.m.) and 15.2% (9 a.m.). The mean of 1,8-cineole contents were  $15.6 \pm 1,5\%$  during the entire circadian rhythm, and showed a high positive correlation with solar radiation ( $R = 0.7$ ) and a moderate and negative correction with humidity ( $R = -0.5$ ) and moderate and positive with temperature ( $R = 0.6$ ). The chemical analysis of essential oils obtained from *C. goetheanus* has been the subject of only one study with results of a 1,8-Cineole chemotype (44.75%) of a specimens sampled in the Amazon [2]. The essential oil of *C. moritzianus* collected in Venezuela showed a predominance of *E*-Caryophyllene (21.9%),  $\alpha$ -Pinene (10.9%) and Viridiflorol (9.7%) and displayed antibacterial activity against *Staphylococcus aureus* (MIC 60  $\mu\text{g/mL}$ ) and *Enterococcus faecalis* (MIC 180  $\mu\text{g/mL}$ ) [3]. The essential oils of forty *C. moritzianus* specimens collected in Colombia showed the terpenes 1,8-Cineole (12.86 – 49.78%) and Limonene (20.00 – 47.09%) as the major compounds [4]. The essential oil of *C. warszewiczianus* Berg from Costa Rica showed *E*-Caryophyllene (30,12%) and caryophyllene oxide (9,83%) as the main constituents [5]. This indicated that there is a significative variability in essential oils of the genera *Calycolpus* and a relationship of 1,8-cineole contents and environmental conditions of *Calycolpus goethanus*.

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