Analysis of essential oils from *breu* samples collected in Alto Erepecuru region, Brazilian Amazon

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Species belonging to Burseraceae family are characterized by production of oleoresins known in Brazil as *breu*, which is called black or white *breu* according to its organoleptic characteristics. Its chemical composition is complex, with monoterpenes and sesquiterpenes in the essential oil and triterpenes in the resinous fraction (1). These oleoresins are employed by traditional communities for headaches treatment by burning and subsequent inhalation. Aiming to standardize the raw material used, in this study we characterized the essential oils obtained from *breu* samples collected in the Alto Erepecuru region, Oriximiná, State of Pará. Aerial parts of each individual were also collected for identification purposes. Voucher specimens are deposited in the INPA Herbarium, Manaus-AM. Essential oils were obtained by hydrodistillation using a modified Clevenger-type apparatus. Refractive index and optical rotation of each essential oil were measured. Chemical characterization was performed by GC/MS and GC/FID using an Agilent system with a HP-5 column. In addition, essential oils were also analyzed by INNOWAX polar column to separate co-eluted major compounds. Identification was made by comparison of the mass spectra with Wiley library and linear retention indexes (2), calculated based on injection of an n-alkanes series. Relative quantification was based on the FID signals. Ten plant samples were collected and nine were identified, of which eight belonged to *Protium* genus, and one to *Tetragastris* genus. Essential oils yields ranged from 0.79% to 5.36% w/w, while the refractive indices ranged from 1.4673 to 1.4937 and optical rotation from -0,668º to +3,664º. Yield variation can be associated with the time and type of oleoresin exposure to the environment as well as its chemical composition, which will also influence the physicochemical parameters. A total of 126 compounds were identified. δ-3-carene/iso-silvestrene mixture represented the main compounds in *P. heptaphyllum* and *P. aracouchini*, ranging from 40.9% to 79.5%. *P. opacum* and the unidentified species showed *p*-cymene as the major component and a chemical composition rich in monoterpenes. *P. spruceanum*, different from the others, was rich in sesquiterpenes, mainly γ-cadinene (14.4%). *T. panamensis* also presented a high amount of sesquiterpenes, but major compound was *p*-cymene (16.4%). *P. unifoliolatum* presented limonene/β-phellandrene mixture (41.1%) and α-terpineol (30.9%) as major compounds and was the only sample with a high content of oxygenated terpenes (36.3% of the identified compounds). *P. strumosum* provided an essential oil rich in monoterpenes (94.5%) containing α-pinene (57.7%) and limonene/β-phellandrene mixture (10.8%) as major constituents. Even with the great chemical variability among the essential oils, five groups can be formed by different species according to the similarity in their composition. Moreover, it seems that the differentiation between white and black breu established by the Quilombolas is more visual than chemical.

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