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SEASONAL EFFECT ON CHEMICAL COMPOSITION AND CYTOTOXIC EFFECT OF THE ESSENTIAL OIL OF *Vitex agnus-castus* L.

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Cancer is a complex disease that evolves through multiple pathogenetic mechanisms, involving modifications in the function of several oncogenes and genes that act in tumor suppression. *Vitex agnus-castus* L (Lamiaceae), popularly known as Angolan rosemary, is a medicinal plant that produces essential oil (EO). This study aims to evaluate the seasonal effect on the chemical composition and cytotoxic activity of *V. agnus-castus* EO. The leaves were collected in Belém, between November 2023 and August 2024. A voucher was incorporated into the UEPA Herbarium (MFS-010520. The leaves were dried in a climate-controlled room, crushed, and subjected to extraction with a modified Clevenger extractor for 3 h. GC-MS analyzed the chemical composition. The in vitro cytotoxicity analysis of EOs was performed using the MTT assay. The rainy season occurred from December to May, with average precipitation of 456.7 ± 164.1 mm, and the dry season from November, June, July and August, with average precipitation of 108.5 ± 70.9 mm. The main chemical constituents (> 5%) were 1,8-cineole (2.07-16.93%), (*E*)-β-Farnesene (5.74-11.19%), Bicyclogermacrene (3.02-8.89%), Sabinene (0.27-7.48%), (*E*)-caryophyllene (3.02-7.45%). The EOs showed antiproliferative activity against the cancer cell lines: gastric ascites (AGP-01), glioblastoma (AHOL), lung carcinoma (A549) and against the healthy murine macrophage cell line (RAW-264). The months with the highest cytotoxic activity against AGP-01 cells were April (IC_{50} 4.15 mg/mL), November (IC_{50} 4.23 mg/mL), and December (IC_{50} 5.71 mg/mL). For AHOL and A549 cells, November (IC_{50} 4.21 and 10.41 mg/mL) and December (IC_{50} 4.75 and 11.80 mg/mL) were the months with the highest cytotoxic activity. Furthermore, anticancer activity was demonstrated in January (IC_{50} 12.51 mg/mL) for A549. Thus, the months with the greatest toxicity for RAW-264 were November (IC_{50} 5.47 mg/mL), April (IC_{50} 5.54 mg/mL), and July (IC_{50} 9.17 mg/mL). *Vitex agnus*-castus is a plant that produces biologically active molecules against cancer.

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