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Nanoencapsulation of *Annona vepretorum* essential oil displays enhanced antitumor activity

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Annona vepretorum Mart. (Annonaceae), popularly known as "bruteira", has both nutritional and medicinal uses. The aim of this study was to investigate the chemical composition and antitumor potential of the leaf essential oil of A. *vepretorum* alone and complexed with β-cyclodextrin in a nanoencapsulation. The essential oil was obtained by hydrodistillation using a Clevenger-type apparatus and analyzed by GC-MS and GC-FID. *In vitro* cytotoxicity of the essential oil and some of its major constituents (spathulenol, ocimene, α-phellandrene, α-pinene and o-cymene) for tumor cell lines from different histotypes was evaluated using the alamar blue assay. Furthermore, the essential oil *in vivo* effectiveness was demonstrated in mice inoculated with B16-F10 mouse melanoma. The essential oil presented bicyclogermacrene, spathulenol, ocimene, α-phellandrene, α-pinene and o-cymene, as major constituents. The essential oil and spathulenol presented promising cytotoxicity. Importantly, the nanoencapsulation of the essential oil led to a higher tumor growth inhibition. In conclusion, the leaf essential oil of *A. vepretorum* presents bicyclogermacrene, spathulenol, ocimene, α-phellandrene, α-pinene and o-cymene, as major constituents and has both *in vitro* and *in vivo* anticancer potential, which was enhanced by nanoencapsulation.

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