



## BIOACTIVE POTENTIAL OF *Uncaria tomentosa*: PHYTOCHEMICAL AND CHROMATOGRAPHIC ANALYSIS

**Jeniffer C. F. Santos (G)<sup>1\*</sup>, Arthur L. T. F. Borges (PG)<sup>1,2</sup>, João V. A. N. Silva (G)<sup>1</sup>, Kathylen V. F. Santos (G)<sup>1</sup>, Nataly C. S. Gama (G)<sup>1,3</sup>, Cindhy G. L. Rodrigues (G)<sup>1</sup>, Ruane O. Santos (G)<sup>1</sup>, Maria C. B. Ribeiro (G)<sup>1</sup>, Fernanda G. C. Silva (PG)<sup>1,2</sup>, Salvana P. M. Costa (PG)<sup>1</sup>, Shirley V. Amorim (PG)<sup>2</sup>, Carlos E. F. Costa (Prof)<sup>4</sup>, João X. A. Júnior (Prof)<sup>1,3</sup>, Camila B. Dornelas (Prof)<sup>1,2,3</sup>, Ticiano G. Nascimento (Prof)<sup>1,2,3</sup>.**

[jeniffer.santos@icf.ufal.br](mailto:jeniffer.santos@icf.ufal.br)

<sup>1</sup> Instituto de Ciências Farmacêuticas – ICF / Universidade Federal de Alagoas – UFAL; <sup>2</sup> PPGMateriais - Centro de Tecnologia – CTEC/UFAL; <sup>3</sup> PPGCF – ICF/UFAL; <sup>4</sup> Universidade Federal do Pará – UFPA.

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### ABSTRACT

The use of medicinal plants in Brazil is an ancient practice, deeply rooted in indigenous, African and European cultures, which introduced the knowledge about the healing potential of different species. Among them, *Uncaria tomentosa*, known as “cat's claw”, is a plant native to South and Central America morphologically characterized by for its claw-like spines, which give it its common name. Traditionally, the decoction of the species is used for inflammatory disorders, arthritis, rheumatism and is also recognized for its antioxidant, antimicrobial and immunomodulatory activities, attributed to the synergy of its phytochemical constituents, such as phenolic compounds and alkaloids, many of which are unique to the species. In this context, the aim of this study was to obtain bioactive extracts of *U. tomentosa*, to characterize them in terms of their phytochemical composition and to establish a method for the liquid-liquid separation of fractions enriched in alkaloids. The extracts were obtained by cold maceration of the crushed bark of *U. tomentosa* in absolute ethanol, followed by filtration and concentration by rotatory evaporation. The residue was subjected to a new extraction procedure using H<sub>2</sub>SO<sub>4</sub> solution at 2%. The ethanolic extract was evaluated in terms of its UV-visible absorption spectrum, the quantification of total phenolics and flavonoids using the Folin-Ciocalteau and aluminum chloride spectrophotometric methods, respectively. The presence of alkaloids was investigated by precipitation using the Dragendorff, Bouchardat/Wagner and Reinecke's salt reagents, and the antioxidant activity by DPPH• radical scavenging capacity. The acidic extract was subjected to precipitation with Reinecke's salt, resulting in an alkaloid enrichment, which was then subjected to liquid-liquid partitioning to obtain different alkaloid fractions, which were analyzed by high-performance liquid chromatography coupled with UV-visible. The extraction method used yielded 10.32%. The alcoholic extract of *U. tomentosa* contained 20.08% ± 1.22 phenolic compounds and 3.37% ± 0.10 total flavonoids. In terms of antioxidant activity, its IC<sub>50</sub>, i.e. the minimum concentration required to neutralize 50% of the DPPH• radicals present in the medium, reached 4.48 µg/mL. The UV-visible scan showed maximum absorption ( $\lambda_{max}$ ) peaks at 270 and 345 nm. The presence of alkaloids was indicated by the formation of precipitates in the three different tests, where, from the chromatographic profile by HPLC-UV-vis, it was possible to identify the presence of the oxindolic alkaloid rhynchophylline. It is concluded that the extract of *Uncaria tomentosa* has a promising phytochemical profile for therapeutic applications and that the method used is effective for obtaining the alkaloids present in the species. The presence of phenolic compounds, flavonoids and alkaloids, including rhynchophylline, together with its significant antioxidant capacity, reinforces the plant's traditional use of the plant in the treatment of inflammatory disorders and indicates its immunomodulatory potential.