

CHROMATOGRAPHY

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Application of combined chromatographic techniques in the screening and separation of complex triterpenoid saponins from *Pithecellobium saman*

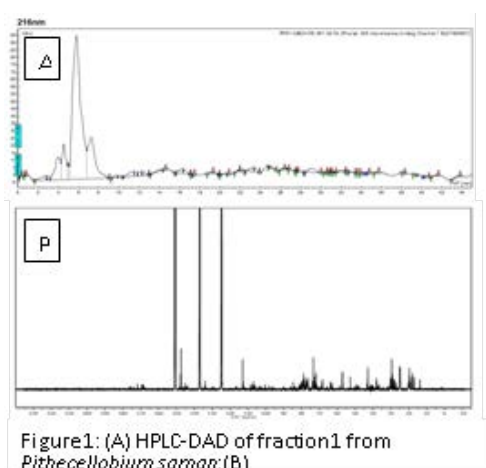
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Introduction & Aim: *Pithecellobium saman* (Leguminosae) is native to tropical America, nowadays widely cultivated and naturalized through tropical regions with ornamental purposes. The leaves are livestock forage supplement and this species is used in traditional medicine as a remedy for the treatment of different diseases. Nonetheless, no chemical investigations or biological evaluations were carried out on the constituents of this species. According to the literature, complex triterpenoid saponins are shown to possess several physiological properties depending on their amphipathic chemical structures, such as the capacity for alteration of membrane permeability. Additionally, these compounds have been reported to possess therapeutic potential for immune system modulation through different mechanisms. As part of our ongoing efforts in discovering potentially bioactive compounds from natural sources, the present study is concerned with the combination of different chromatographic methods to improve the isolation of individual substances from a complex mixture of compounds with similar chemical structure.

Methodology: The root barks of *Pithecellobium saman* were extracted with MeOH. After concentration, the resulting residue was partitioned between water and n-BuOH. The organic phase was concentrated, submitted to molecular exclusion chromatography and monitored by thin layer chromatography, affording four fractions containing a complex mixture of saponins. The fractions were submitted to reversed phase high performance liquid chromatographic analysis, using an ultraviolet detector, with MeOH:H₂O (65:35) as solvent system, a flow rate of 0.5 mL and a chromatographic run time of 45 minutes.

Findings: By a combination of chromatographic methods and spectroscopic techniques, it was demonstrated that the fractions were composed of a multicomponent mixture of complex triterpenoid saponins in different proportions.

Conclusion: A combination of different chromatographic techniques was required to perform the isolation of the substances from a complex mixture and to establish a preliminary structural characterization of its constituents.



Biography

Maria de Fátima Simão Jucá Cruz completed her Graduation in Chemistry and Master's Degree at Federal Rural University of Rio de Janeiro (UFRRJ). She is pursuing her Doctorate degree in Natural Products Chemistry at UFRJ in Brazil.

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