

## Extraction and Characterization of Polysaccharides from non-traditional Brazilian Amazon sources

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108

Cupuassu (*Theobroma grandiflorum*), tucumã (*Astrocaryum aculeatum*), peach palm (*Bactris gasipaes*) and abricó (*American Mammea L.*) are exotic fruits found in the Brazilian Amazon rainforest. All of them are well known by the native populations, and for centuries the pulps have been used in the production of juices, deserts, jams, syrups, and alcoholic beverages, among others. Additionally, the fruit seeds have been used as animal feed, fertilizers or to plant new seedlings, but a great part of these seeds are usually discarded.

Therefore, the aim of this study was to extract polysaccharides from the seeds of these four fruits and characterize the obtained fractions. The extraction was performed through two solid-liquid extraction methods using different organic solvents. In the first methodology, the seeds were treated with an aqueous solution followed by the precipitation of polysaccharides with absolute ethanol. In the second methodology, the polysaccharides were extracted using an alkaline solution (4 M NaOH + 0.02 M NaBH<sub>4</sub>) and subsequently dialyzed. The polysaccharides obtained by both methods were lyophilized and analyzed by high-performance liquid chromatography (HPLC). Moreover, the antioxidant activity and total phenolic content in the obtained polysaccharides were also determined.

According to the results, tucumã and abricó seeds presented the best yield of extraction when using alkaline treatment, achieving values of 89% and 90%, respectively. On the contrary, the peach palm seeds showed the highest yield of extraction (93%) when water was used as solvent and ethanol for the following precipitation. The percentage of neutral sugars (i.e. glucose, galactose, xylose, mannose, and arabinose) and the antioxidant activity varied according to the structure of each seed. Among all samples, the total sugar extracted from peach palm seed corresponded to 97.4% of the lyophilized material, being mannose (62%) the more representative sugar.

In brief, this study present two simple methodologies to successful obtain polysaccharides from seeds, which could be used in food, chemical or cosmetic industries due to their composition and biological properties. The increasing demand for polysaccharides obtained from natural sources as well as the need to explore new sources were crucial to encourage this research.