Development and Characterization of Lipid Nanocapsules with *Attalea Phalerata* Pulp Oil

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The *Attalea phalerata* Mart ex Spreng palm is found in Brazil mainly in the Cerrado region. The fruit of *A. phalerata*, locally known as 'bacuri’, has fleshy flesh with a color ranging from yellow to orange. Among the bioactive compounds, bacuri pulp oil (BPO) has a high content of carotenoids (β-carotene). A recent study with BPO demonstrated an anti-inflammatory effect attributed to the high carotenoid content through its oral consumption [1]. However, carotenoids are easily degraded by reacting with oxygen, light, heat and some enzymes. To prevent the degradation of these compounds and improve their bioavailability, technologies have emerged, such as encapsulation in lipid nanocapsules (LNCs). LNC is a new and promising technique used in the Drug Delivery System (DDS). The development of LNCs replacing synthetic oils with a natural oil with a potential natural anti-inflammatory agent is interesting and promising. Given the above, the objective of the work was to develop and characterize (size, polydispersion and zeta potential) of BPO nanocapsules (BPON). The BPON were developed using the phase inversion method [2]. Briefly, liquid lipid, BPO, nonionic surfactant, hydrogenated soy lecithin was mixed at room temperature and NaCl in Milli-Q water. The mixture was subjected to five temperature cycles and an ice bath was given at the end. The results after development, showed LNCs with average sizes of 55.87 ± 0.41 nm, PDI of 0.118 ± 0.066 and zeta potential of -24.80 ± 1.42. The results suggest a system with characteristic sizes for nanosystems. The low PDI (<0.150) and zeta potential distant from zero (negative) suggest stability for the system. Thus, BPON are viable for further characterization studies and later in vitro and in vivo biological evaluation.