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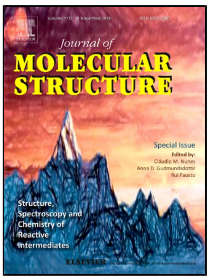

Elaboration and characterization of the inclusion complex between β-cyclodextrin and the anticholinesterase 2-oleyl-1,3-dipalmitoyl-glycerol extracted from the seeds of *Platonia insignis* MART

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Elaboration and characterization of the inclusion complex between β-cyclodextrin and the anticholinesterase 2-oleyl-1,3-dipalmitoyl-glycerol extracted from the seeds of *Platonia insignis* MART

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ABSTRACT

2-oleyl-1,3-dipalmitoylglycerol (ODG) obtained from the bacuri seeds. *In vitro* tests showed inhibition of the enzyme acetylcholinesterase. However, ODG has low solubility in water. In order to increase its solubility, the inclusion complex between ODG and β-cyclodextrin (β-CD) was obtained by solubilization followed by lyophilization. The objective of this study was to prepare, characterize and evaluate the solubility of the complex that was characterized by infrared spectroscopy (IR), differential scanning calorimetry (DSC), thermogravimetry (TG), scanning electron microscopy (SEM), X-ray diffraction XRD), hydrogen magnetic resonance (^{1}H NMR) and phase solubility. All results confirmed the formation of the inclusion complex between ODG and β-CD. By ^{1}H NMR data, it was possible to predict that the ODG was encapsulated by the wider side of the β-CD cavity. The solubility isotherm allowed to determine the apparent stability constant (K = 339.38 L mol^{-1}) and the inclusion efficiency (IE = 57.82%), as well as the 1:1 stoichiometry between ODG and β- CD. The rate of dissolution and solubility of the inclusion complex were significantly improved as compared to the pure drug. Therefore, the use of ODG-β-CD can effectively improve the solubility and dissolution rate of free ODG, being a promising approach to promote its clinical application.

Keywords: Acetylcholinesterase; Bacurizeiro; Solubitity; Inhibition; Internal cavity