

ABSTRACT

Prediction of the Effect of P-Methoxycinnamic Acid (pMCA)-Succinic Acid Cocrystal Formation by Solvent Evaporation Method on Solubility and Dissolution Rate

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p-methoxycinnamic acid (pMCA) is an active compound originally obtained from *Kaempferia galanga* Linn. which has clinical activity as an anti-inflammatory, hepatoprotective, antidiabetic, and antihyperglycemic. pMCA is poorly soluble in water with a solubility value of 0.712 mg/mL at 25°C. The drug with poorly soluble in water has a low bioavailability in the body. Forming cocrystal pMCA-succinic acid was made to improve its solubility and dissolution. Cocrystal pMCA formed when succinic acid as the coformer, enters the crystal lattice of pMCA as the active compound. The aim of this study is to investigate the effect of cocrystal formation pMCA-acid succinate to the solubility and dissolution rate made using solvent evaporation method. The cocrystal was made at 1:1 stoichiometry ratio using slowly evaporation. The dissolution and solubility of formed cocrystal is predicted by analyzing characterization which conducted by previous researchers. The results of characterisation with the DSC and X-ray diffraction indicate the presence decreases of pMCA crystal lattice energy. Low lattice energy will make it easier for solvents to enter into the crystal lattice and dissolve the cochlear components so that the solubility and dissolution pMCA rate will increase. Based on predictions, literary studies, and the analysis of characterization results, it predicted that the coristal pMCA-succinic acid affects the solubility and dissolution rate of pMCA compounds.

Keywords: Cocrystal, Solvent Evaporation, Dissolution, Para-Methoxycinnamic Acid, Succinic Acid