

## ABSTRACT

### **Predicting The Effect Of Cocrystal p-Methoxycinnamic Acid-Saccharin By Solvent Evaporation On Solubility And Dissolution Rate Laboratory Research – *Literature review***

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P-Methoxycinnamic acid (pMCA) is the active compound hydrolyzed from ethyl p-methoxy cinnamic which has an analgesic effect. It has low solubility in water (0,712 mg/mL or 1:1400 water at 25°C) which can affect to solubility, dissolution rate and bioavailability of pMCA. Therefore, one of the methods to increase the solubility of pMCA was forming cocrystal. The cocrystallization of pMCA with saccharin in molar ratio 1:1 using solvent evaporation method. The purpose of this research is to predict the effect of cocrystal pMCA-saccharin by solvent evaporation method on solubility and dissolution rate. Solubility and dissolution rate predicted by physicochemical characteristics of cocrystal pMCA-saccharin such as melting point from (Differential Thermal Analysis) DTA, the intensity of peak from Powder X-Ray Diffraction (DSXS), and particle size from Scanning Electron Microscope (SEM). The thermogram of cocrystal showed a decrease in the melting temperature compared with pure pMCA. Thermogram from DTA showed an endothermic peak at 163,0°C. Diffractogram from DSXS showed a decrease in the peak intensity compares with pure pMCA. The peak intensity of the cocrystal 1: 1 is 20,000 counts, lower than the peak intensity of pure pMCA. Microphotograph of cocrystal 1:1 showed different morphologies and lower particle size compared with pure pMCA. Based on a decrease in the melting point, peak intensity, and particle size of cocrystal pMCA-saccharin, cocrystal pMCA-saccharin predicted to increase the solubility and dissolution rate of pMCA.

**Keywords:** p-Methoxycinnamic acid (pMCA), Saccharin, Cocrystal, physicochemical characterization, Solubility, Dissolution rate.