

ABSTRACT**Physicochemical Characterization of Cocrystal *p*-Methoxycinnamic Acid-Succinic Acid Made by Solvent Evaporation Method**

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p-methoxycinnamic acid (PMCA) is a cinnamic acid derived compound obtained from hydrolysis process of ethyl *p*-methoxycinnamic acid (EPMCA). PMCA has antinociceptive, analgesic, and antihyperglycemic activity. PMCA is an active ingredient that has low solubility of 0.71 mg/mL at 25°C. Cocrystal formation is one of the methods to improve the solubility of PMCA. In this study, PMCA-succinic acid cocrystal made by the solvent evaporation method with 1:1 molar ratio. Physicochemical characterization of PMCA-succinic acid cocrystal was performed by differential scanning calorimetry (DSC), powder X-ray diffraction (PXRD), and scanning electron microscope (SEM). The DSC thermogram shows decrease in the melting point of cocrystal compared to the melting point of PMCA (173.55°C), succinic acid (187.55°C), and physical mixture (159.53°C). The cocrystal thermogram shows an endothermic peak at 158.46 ° C which represents the melting point of the cocrystal. Diffractogram of PMCA-succinic acid cocrystal shows a new diffraction peak at an angle of $2\theta = 21.92; 25.91; 39,25^\circ$ which is not found in the diffractogram of each single component and its physical mixture. SEM photomicrograph shows PMCA-succinic acid cocrystal has a different surface morphology and smaller size than the constituent materials.

Keywords: *p*-methoxycinnamic acid (PMCA), Succinic acid, Cocrystal, Solvent evaporation, Physicochemical characterization