ABSTRACT

CHARACTERIZATION OF PARA METHOXYCINNAMIC ACID-β-CYCLODEXTRIN INCLUSION COMPLEX
(Prepared by Co-precipitation Method)

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Para methoxycinnamic acid (pMCA) is a substance obtained from the hydrolysis of ethyl 4-methoxycinnamate which is extracted from Kaempferia galanga Linn. pMCA has an analgesic effect but, it has very low water solubility (712 mg/ L, 25°C). Therefore, pMCA was complexed with β-Cyclodextrin (β-CD) to enhance the solubility of the substance. The aim of this study was to characterize pMCA-β-CD inclusion complex in solid state. The inclusion complex was prepared in 1:1 molar ratio with co-precipitation method. The inclusion complex was made by dissolving pMCA and β-CD (1:1 molar) in isopropanol 60% as solvent and then add acetone as antisolvent. The solution was heated in sonicator (51°C) and cooled abruptly using dry ice. The precipitate were collected by filtration and dried in oven (60°C) for ± 90 minutes. Inclusion complex of pMCA-β-CD in solid state was characterized using X-ray diffractometer and FTIR. The diffractogram of the pMCA-β-CD showed the disappearance of some of the pMCA spectral lines and the appearance of low intense lines Analysis to infrared spectra showed different characteristic between the inclusion complex, pMCA single compound, β-CD and the physical mixture. This results showed that there was an interaction between pMCA and β-CD in the forming of the inclusion complex. Dissolution studies were carried for pMCA, physical mixture and inclusion complex of pMCA-β-CD using paddle type dissolution apparatus. The pMCA-β-CD inclusion complex presented fastest dissolution rate compared to physical mixture of pMCA-β-CD and pMCA.

Keyword : para methoxycinnamic acid, β-cyclodextrin, inclusion complex, co-precipitation method, characterization

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