

ABSTRACT

THE INFLUENCE OF β -CYCLODEXTRIN (β CD) INCLUSION COMPLEX SYSTEM ON P- METHOXYCINNAMIC ACID (pMCA) STABILITY AT VARIOUS pH

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p-Methoxycinnamic acid (pMCA) is an antinociceptive compound originated from *Kampferia galanga* L. rhizome. pMCA is aromatic compound consist of methoxy, aromatic ring and alkene as non – polar group, also carboxylic acid as polar group. As a weak acid with value of pKa 4,11 pMCA molecular and ionic form is affected by pH change. On acidic environment pMCA is more unstable and susceptible to nucleophilic acyl substitution. To enhance pMCA stability, β -cyclodextrin (β CD) as complexing agent is added. β CD establish monomolecular inclusion complex to trap pMCA on β CD cavity. The stability of pMCA compound and pMCA - β CD complex has been studied at various pH (3, 4, 5, and 6). The buffer solution of 24 ppm of pMCA in various pH were performed at $50 \pm 0,5^{\circ}\text{C}$ for 24 hours at 5 sampling point (0h, 2h, 5h, 9h and 24 h). The sample was analysed by Reverse Phase (RP) High Performance Liquid Chromatography (HPLC) on their optimum and validated condition. The result showed that pMCA compound at various buffer solution (3, 4, 5 and 6) follow first order. Rate constant of pMCA compound at pH 3 is higher than the other, and most stable at pH 6. Whereas the presence of β CD could increase pMCA stability at pH 3.

Keywords : p-methoxycinnamic acid, β -cyclodextrin, inclusion complex, pH, HPLC, validation, stability enhancement