

ABSTRACT

**ENHANCEMENT OF CARBAMAZEPINE DISSOLUTION RATE
BY
CARBAMAZEPINE – NICOTINAMIDE COCRYSTALLIZATION
(Solvent Evaporation with Rotavapor and Rapid Cooling Method)**

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Carbamazepine is an antiepileptic drug that have greater effect in partial complex and tonic – clonic seizures. It has been classified as Biopharmaceutical Class II (BCS II) which has poor solubility in aqueous media and high permeability through membrane. Carbamazepine – nicotinamide cocrystal has been studied by many researcher as a method to improve carbamazepine dissolution rate and stability. The aim of this study is to compare the carbamazepine – nicotinamide cocrystal dissolution rate between solvent evaporation with rotavapor and rapid cooling technique. Solubility and dissolution test were carried out to determine carbamazepine – nicotinamide cocrystal properties. Solubility test result in no significant increase in carbamazepine – nicotinamide cocrystal. It is posted that carbamazepine – nicotinamide cocrystal will undergo bond-breaking while it is exposed to solvent and will separate to its former drug. The carbamazepine – nicotinamide cocrystal solubility then is the result from carbamazepine former drug solubility. Dissolution rate is also showed no significant increase in carbamazepine – nicotinamide cocrystal. Many factor has been reported to contribute to its phenomena, such as the high tensile strength of carbamazepine – nicotinamide cocrystal and the forming of low-solubility hydrate while its in sink condition.

Keywords : *Carbamazepine, Nicotinamide, Cocrystal, Solubility, Dissolution Rate*