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Extended Abstract

Study on the Physical and Chemical Behavior of the Carbamazepine-β–Cyclodextrin Inclusion Complex †

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Carbamazepine (CBZ) is a sodium channel blocker that has been recommended for the treatment of epilepsy and trigeminal neuralgia for over 40 years [1–3]. Cyclodextrins are the most suitable candidate for the inclusion of CBZ due to the dimension of the internal cavity, in which the active drug can fit properly. The aim of the current study is to evaluate the ability of β-cyclodextrinto include CBZ. The kneading method of complexation in solid state (1:1 molar ratio) was usedto obtain the inclusion complex. For comparison, a simple physical mixture was prepared. Physical and chemical characterizations of the raw materials, physical mixture and the inclusion complex were performedusing Fourier-transforminfrared spectroscopy, X-ray diffraction, scanning electron microscopy and simultaneous thermal analysis. The results obtained using these analytical techniques proved that carbamazepine forms stable complexes with β-cyclodextrin in a 1:1 molar ratio, and the complexation was almost complete.

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