Thesis Title Gelatinization of Tapioca Starch: Effect on Tablet Properties

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ABSTRACT

Tapioca starch (TS) can be widely used as a binder or disintegrant in tablet formulation. However, the tablets containing TS as binder probably exhibit slow disintegration and dissolution. Moreover, the preparations of starch paste are not readily controlled. In this study, pregelatinized tapioca starches (PTS) were prepared at two concentrations of slurry that is 5% (F) and 10% slurry (T) and cooked at 50, 60, 65, 70, 80, 90 and 100 °C for 10, 20 and 30 min. The efficiency of these starches were evaluated at 2% level in hydrochlorothiazide (HCTZ)/Emcompress® direct compressed tablets. It was observed that hardness of HCTZ/Emcompress® tablets did not depend on the compression force, cooking temperature or concentration of slurry employed to prepare PTS. At the cooking temperature of 60 to 70 °C or cooking time 20 min, F yielded the tablets with good disintegration and dissolution; however these properties were not better than

those obtained with corn starch (CS) and TS. In the wet granulation, 8% and 12% PTS pastes were employed as the binder in HCTZ/lactose tablets. The disintegration and dissolution properties of the tablets containing F prepared at 65 °C for 20 min were comparable to those containing TS but slightly less satisfactory than those containing CS. The effect of PTS on the tablets prepared by wet granulation was more pronounced than those by direct compression method. F and T cooked at the temperature of 70 °C and 80 °C, respectively, showed the peak Brabender viscosities. It could be concluded that the optimum cooking temperature and cooking time of PTS was 65 °C and 20 min, respectively.