Abstract

The aim of this study is to prepare acrylamide grafted starch for tablet disintegrant from tapioca starch. The reactions were done by grafting acrylamide groups on anhydroglucose unit in 3 ratios. Ratios between the mole number of acrylamide and anhydroglucose unit were varied to 1:5, 1:20 and 1:50. And these reaction were run by keeping temperature constantly at 30°C for 48 hours using ceric ion in acidic solution as initiator. After the reaction was completed, grafted starches were washed by centrifugation and dried by spray drying method.

First, the obtained products including native tapioca and Explotab® were characterized by Infared spectroscopy (IR), Scanning electron microscope (SEM), Bulk swelling capacity and pH determination. Then, all of these grafted starches were evaluated the effectiveness as tablet disintegrant at 4% concentration in 350 mg Hydrochlorothiazide tablet. These tablets were compressed by direct compression and wet granulation at the compression force 8.0, 10.0, 12.0 and 14.0 kN. The results showed that disintegration time of tablet prepared from ratio 1:5 had nearly closed time to Explotab®. The disintegration time of Explotab® was between 9-11 seconds while the disintegration time of this sample was 15-17 seconds when these tablets were prepared by direct compression. If, these tablets were prepared by wet granulation method, the disintegration time were longer than direct compression; the disintegration time of tablet prepared from acrylamide 1:5 was in range 123-137 seconds while Explotab® was 107-117 seconds. Therefore, acrylamide grafted tapioca starch may be used as disintegrant in tablet. However, these grafted starches should be further studied in stability and toxicity.