

Utilization of Microcrystalline Cellulose of Sugar Palm Bunches (*Arengapinnata* (Wurmb) Merr.) as Excipients Tablet Direct Compression

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Abstract : Microcrystalline cellulose is the best in the manufacture of tablet excipients direct compression. This study aims to determine the concentration of α -cellulose contained in the sugar palm bunches, isolate α -cellulose, and change it into microcrystalline cellulose. The microcrystalline cellulose of sugar palm bunches (MCCSPB) was then characterized and compared with commercial MCC (Avicel PH 102). The characteristics of MCCSPB included qualitative identification, pH, drying shrinkage, polymerization degree, functional groups, morphology, particle size, flowability, compressibility, and hydration capacity. Furthermore, MCCSPB were molded into tablets and evaluated weight uniformity, friability, hardness, and disintegration time of tablets. The research results showed that sugar palm bunches had high concentration of α -cellulose of 33.79%. The yields of α -cellulose and microcrystalline cellulose from sugar palm bunches were 20-26% and 16 to 21.33%, respectively. MCCSPB had a functional group that was synonymous with Avicel PH 102, irregular shapes and uneven surfaces, the size of 100-300 μ m, the polymerization degree 180.7, good flow properties and compressibility, hydration capacities and swelling respectively for 2.62% and 15.56%. The molded tablets using the MCCSPB had a weight uniformity that is qualified to the Indonesian Pharmacopoeia edition III. Tablet hardness and disintegration time were 7.05 and 0.23 minutes, respectively. Thus, it can be concluded that the MCCSPB could be used as a filler, binder, and a disintegrator in the manufacture of tablet direct compression.

Keywords: *Arengapinnata* (Wurmb) Merr., α -cellulose, microcrystalline cellulose, characteristics, tablet.