

Evaluation of Excipient Properties of Starch Extracted from *Dioscorea alata* (Kahata Angala) grown in Sri Lanka and its Suitability in the Formulation of a Losartan Potassium Tablet

SANC Samarasinghe^{1#}, BMWIM Warapitiya¹, S Sabalingam¹, SU Kankanamge¹, and RN Pathirana¹

¹Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

#36-pmy-0016@kdu.ac.lk

Abstract

Starch is an essential excipient used in the manufacturing process of pharmaceuticals. This study aimed to evaluate the excipient properties of *Dioscorea alata* which is locally called Kahata Angala compared to commercially available maize starch BP. *D. alata* starch was extracted following the aqueous extraction method. Both *D. alata* and maize starches were tested for particle size, Infrared spectrum analysis, pH, hydration capacity, bulk density, tapped density, true density, angle of repose, Hausner ratio, compressibility index and proximate composition. Losartan potassium 50 mg tablets were formulated following the wet granulation using *D. alata* starch as a binder. T-test was used to analyse the proximate and physicochemical properties of starches. The results showed that all the physicochemical characteristics of *D. alata* starch were statistically different from maize starch BP ($p < 0.05$). However, *D. alata* starch exhibited better flow properties over maize starch BP in terms of angle of repose and Hausner ratio. Both starches were similar in terms of moisture content, crude fat content, and carbohydrate content ($p > 0.05$). Infrared spectrum indicated that *D. alata* starch has no interactions with Losartan potassium. Tablets which were prepared using *D. alata* starch did not meet the pharmacopeial standards in weight variation tests, hardness tests, disintegration tests, and dissolution tests. However, their friability percentage was less than 1%. The study concludes that several parameters of *D. alata* starch are favourable as excipient properties as per the pharmacopeial specification and certain parameters are similar to maize starch BP. However, the disintegration and dissolution profiles of tablets formulated using *D. alata* starch should be improved.

Keywords: *Excipient properties, Dioscorea alata starch, Losartan potassium*