

Thermal and Morphological Characterization of Native and Plasticized Starches of Sweet Potato (*Ipomoea batatas*) and Diamante Yam (*Dioscorea rotundata*)

Abstract

The objective of this study is to determine the morphological, physicochemical, and thermal properties of starches from two species of tubers, *Ipomoea batatas* (SP) and *Dioscorea rotundata* (DY), as well as the influence of glycerol as a plasticizer. The amylose/amylopectin content is 25.59/74.4 in DY; the granules are round and elliptical in shape with an average size of 25.5 μm , and the degradation temperature is 311.01 $^{\circ}\text{C}$. The amylose/amylopectin content is 45.9/54.1 in SP; the granules are polygonal, oval, and semi-oval in shape with an average size of 9.5 μm , and the degradation temperature of 312.89 $^{\circ}\text{C}$. The morphology of the granules in the different starch/glycerol formulations showed no structural damage to both species. However, increased degradation temperature was observed in the plasticized starches and in the shape and intensity of the band. Results indicate that the addition of glycerol improves the properties of native starches for processing and their potential use as bioplastics.

Keywords: *Dioscorea rotundata*; *Ipomoea batatas*; Morphology; Thermal analysis; Amylose and amylopectin content