World Academy of Science, Engineering and Technology
International Journal of Agricultural and Biosystems Engineering
Vol:13, No:06, 2019

Physicochemical Characteristics of Rice Starch Chainat 1 Variety by Physical Modification

Authors : Orose Rugchati, Sarawut Wattanawongpitak

Abstract : The Chainat 1 variety (CN1) of rice, which generally has high amylose starch, is distributed in the lower part of Northern Thailand. CN1 rice starch can be used in both food and non-food products. In this research, the CN1 rice starch from the wet-milling process was prepared by Pre-Gelatinization (Heat-Moisture Treatments, HMT) under different conditions: percentage of moisture contents (20% and 30%) and duration time in minutes (0, 30, 60, and 90) at a specific temperature 110°C. The physicochemical characteristics of CN1 rice starch modification, such as amylose content, viscosity, swelling, and solubility property, were evaluated and compared with native CN1 rice starch. The results showed that modification CN1 rice starch tends to have some characteristics better than native starch. The appearance color and starch granule of modified CN1 by HMT have more effective characteristics than native starch when increased duration time. The duration time and moisture content are significant factors to the CN1 starch characteristic by HMT. Moreover, physical modification of CN1 starch by HMT can be described as a modified rice starch providing in many applications and the advantage of biodegradability development.

Keywords : physicochemical characteristics, physical modification, pre-gelatinization, Heat-Moisture Treatments, rice starch, Chainat 1 variety (CN1)
Conference Title : ICAFBE 2019 : International Conference on Agricultural, Food and Biosystems Engineering
Conference Location : Dublin, Ireland
Conference Dates : June 27-28, 2019

Open Science Index, Agricultural and Biosystems Engineering Vol:13, No:06, 2019 publications.waset.org/abstracts/107385/pdf