Modified Bamboo Shoots Flour Derived from the Ampel Gading Bamboo (Bambusa vulgaris Schrad var. Striata): Physicochemical Properties and Potential Applications as a Thickening Agent

ABSTRACT

Modified flour is widely used in the food industry to enhance viscosity and texture. Previous research has investigated fermenting Bamboo Shoots Flour from Ampel Gading Bamboo which is rich in fiber. Physical process combination, like temperature changes, and chemical modifications using acids or bases, may alter the flour's gel-forming properties, thereby expanding its applications, including as a thickening agent. The objective of this study is to evaluate the physicochemical properties and potential applications of Modified Bamboo Shoots Flour (MBFS) as a thickening agent. The analysis demonstrated that MBSF comprises 28.41% carbohydrates, with 4.88% crude fiber and 18.68% starch, featuring 4.74% amylose and 13.94% amylopectin (wet basis). Additionally, it contains 28.10% protein and 11.17% fat (wet basis), maintaining the characteristic form of MBSF. Scanning Electron Microscope (SEM) evaluation revealed the presence of ovate-shaped, rough and irregular surface starch granules. Heating a 2% MBSF suspension to 100°C increases viscosity, solubility, and swelling power. Low acidity (pH 10) enhances swelling power without affecting viscosity significantly. Both low acidity and heat treatments enhance the thickening properties of the MBFS. This study offers fundamental insights into the physical and chemical characteristics of MBFS, thereby facilitating its potential application in final products.