

Identification of the Physical, Chemical, and Functional Properties of Black Glutinous Rice Flour, Black Rice, and Red Rice

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ABSTRACT

This study aims to identify the physical, chemical, and functional characteristics of black glutinous rice flour, black rice flour, and red rice flour. This study is a laboratory study with a quantitative descriptive design. The flour samples were prepared through the following steps: sorting, washing, drying, cooling, milling, sieving through an 80-mesh sieve, and packaging. The physical parameters analyzed included color, synereses, and gelatinization viscosity. The chemical parameters included moisture content, carbohydrates, amylose, amylopectin, dietary fiber, fat content, protein content, and ash content, while the functional properties included swelling power, water holding capacity (WHC), and oil holding capacity (OHC). The data were analyzed using quantitative descriptive statistics by calculating mean values, standard deviations, and percentages, which were then compared across flour types. The results showed that the three types of flour had distinct characteristics. Brown rice flour has a brighter color, the highest gelatinization viscosity of 3,560 cP, the highest moisture content of 11.11%, the highest amylose content at 19.24%, as well as the best swelling power at 406.05%, a high WHC of 132.94%, and a better OHC of 133.17%. Black rice flour exhibits better gel stability and stands out for its carbohydrate content at 79.33% and dietary fiber content at 17.88%. Black glutinous rice flour has the highest ash content at 2.15%, the highest fat content at 2.42%, the highest protein content at 8.28%, and a higher amylopectin content at 62.33%, making it suitable for products requiring a sticky and elastic texture. These differences in characteristics indicate that each flour has distinct potential applications in the development of functional food products based on local ingredients.

Keywords: *Physical characteristics, Chemical composition, Functional properties, Colored rice flour*