Effect of infrared drying on phytochemical content, antioxidant activity and physicochemical properties of germinated brown rice

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Abstract: Infrared drying (IR) is well known, as an effective drying method due to high heat and mass transfer rates and also a low technical structure equipment. This drying method is considered attractive because it reduces the drying time without reducing the quality of rice. The effect of infrared drying at different power (1000 and 1500-watt) and temperature (60, 75 and 95°C) on phytochemical content, antioxidant activity and physicochemical properties of Hawm Kradang-Ngah and Seebukabntang germinated brown rice was investigated. Hawm Kradang-Ngah and Seebukabntang are famous local rice varieties which widely cultivar in the south of Thailand, especially, in Narathiwat province. Hawm Kradang-Ngah is a medium grain kernel, red colored brown rice with moderate amylose content while Seebukabntang is a short grain and high amylose content rice. In this study, drying temperatures have no significant effect on total phenolic content (TPC), total flavonoid content (TFC) and antioxidant activity were compared to germinated brown rice without drying. Additionally, the qualities analysis showed that color, water absorption, cooking time and solid loss of IR drying rice were significantly different compared to brown rice. The information reveals in this study can provide the method of choice for germinated brown rice production and applications.

Keywords: Phytochemical content; Physicochemical properties; Infrared drying; Antioxidant activity; Germinated brown rice