Title Accelerated aging of jasmine brown rice by high-temperature fluidization technique

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Abstract

After being cooked, newly harvested brown rice becomes a pasty mass and swells only slightly. To modify these undesirable brown rice properties, the paddy needs to be stored for at least 3–6 months. However, problems arise since brown rice has short shelf-life (3–6 months) due to accumulation of free fatty acids (FFA) leading to rancidity during storage. In the present study, high-temperature fluidized-bed drying technique in combination with tempering step was tested to alleviate the above-mentioned problems. The quality of rice dried at temperatures of 130 and 150 °C and tempered for 30 up to 120 min was compared to that of brown rice stored at ambient temperature (approximately 30 °C) for 7 months. The experimental results showed that the cooking and eating properties of the fluidized bed dried brown rice, i.e., hardness, solid loss, volume expansion and elongation ratio, changed in a similar fashion to those of the conventionally aged brown rice. The drying temperature and tempering time affected significantly the brown rice properties. The texture of cooked thermally treated brown rice was significantly firmer than that of the conventionally aged brown rice. In addition, it was found for the thermally treated brown rice that the contents of free fatty acids increased only slightly during storage while the glycemic index reduced from high to low-medium level.