

Title Effect of pre-steaming on production of partially-parboiled rice using hot-air fluidization technique

Author Thanit Swasdisevi, Weera Sriariyakula, Warunee Tia and Somchart Soponronnarit

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Abstract

Fluidization technique was widely used to dry agriculture products because of its effectiveness in drying. To produce partial-parboiled rice using hot-air fluidization technique has been received increasing attention due to simplicity of operation. Thus, the purpose of this work was to investigate the effects of pre-steaming time and drying temperatures on qualities of partial-parboiled rice. The results revealed that head rice yield, pasting temperature and degree of gelatinization increased with an increase in pre-steaming time whereas white belly decreased. The percentage of water uptake of pre-steamed rice decreased with an increase in drying temperature while the percentage of solid loss and stickiness were not affected. The hardness of pre-steamed rice was higher than that of reference rice and it increased with an increase in drying temperature. To obtain the suitable conditions for producing partially-parboiled rice using hot-air fluidization technique, paddy was soaked at temperature of 80 °C for 5 h and then it was blown with saturated steam temperature of 102 °C for 70 s (pre-steaming). After that it was dried using fluidization technique at hot-air temperature of 140 °C for 2 min and then it was tempered for 30 min; furthermore, it was ventilated at ambient air temperature until the final moisture content was approximately 14–16% d.b.