

The effects of milling degree and type of bag on fungal infection and some chemical contents of stored milled rice

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Abstract

The effects of milling degree and type of bag on fungal infection of stored milled rice were investigated together with some chemical contents (glucose, amylose, protein and total lipid contents), and changes in moisture content. Rice var. IR 64 with different milling degrees (85, 90, 95 and 100 percent) packed in jute and polypropylene bags (1 kg of milled rice/bag) were stored under laboratory conditions with temperature between 24.3-27.3 C and relative humidity 52.6-81.9 percent for 3 months. The initial moisture content (m.c.) of milled rice was more or less 14 percent. Three replications (3 bags) were used for each treatment. Each bag was put individually and was arranged randomly on a wooden pallet. The results showed that in general, the increase of milling degree and duration of storage decreased the m.c. Type of bag did not give significant differences on the m.c. Twenty eight fungal species were isolated from rice with different milling degree and bag type during storage. The predominant species was *Aspergillus candidus*. Total fungal population decreased with the increase of milling degree and duration of storage. Bag type did not give significant differences on total fungal population. In general, the increase of milling degree increased glucose content. Glucose content in milled rice packed in jute bag was higher than that in polypropylene bag. Glucose content tended to decrease with the increase of storage duration. The increase of milling degree increased amylose content in milled rice. Amylose content of milled rice packed in jute bag was lower than that in polypropylene bag. The increase of storage duration decreased amylose content in milled rice. In general, protein content decreased with the increase of milling degree and duration of storage. Bag type did not give significant differences on protein content. Total lipid content decreased with the increase of milling degree and duration of storage. Total lipid content of milled rice packed in jute bag was lower than that in polypropylene bag, but based on chemical analysis the difference was not significant. Based on statistical analyses, correlation between the m.c and total lipid content with total fungal population was positive. There was no correlation between glucose, amylose and protein contents with total fungal population. Rice with high milling degree can be stored safely for long period, but it has low chemical (nutritional) contents.