Title	Changes to physicochemical properties and aroma of irradiated rice
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Abstract

Gamma-irradiation at dosages of 0.2–2.0 kGy controlled insects in packaged aromatic milled rice (KDML-105). However, it induced changes in physicochemical properties of the rice. Decreases in some pasting parameters, increases in water absorption and total solids in cooking water, and decreased cooked rice hardness showed that starch granules of milled rice were changed by irradiation. Alterations of the granular structure of starch were seen by scanning electron microscopy. These changes affected the texture of the cooked rice. In addition to an increase in yellowness (*b*-value) and an increase in lipid oxidation (TBA, thiobarbituric acid) and a decrease in volatile compounds (ACPY, 2-acetyl-1-pyrroline), irradiation contributed to changes in the colour and aroma of irradiated cooked rice. Gamma dosage had a significant positive correlation ($P<0.01$) with the *b*-value, pasting properties and a negative correlation with cooked rice hardness and ACPY content. Panelists responded to these changes with less perception of sensory qualities. Maximum doses of less than 1.0 kGy should be used to disinfest aromatic rice although when considered strictly on aroma, less than 0.5 kGy would be more suitable.