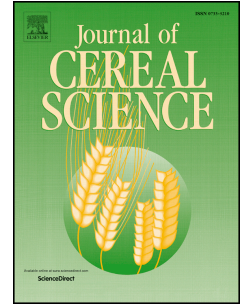


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Changes in the properties of rice varieties with different amylose content on dry heat parboiling

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ABSTRACT

Dry heat parboiling is a unique paddy processing technique that has been scarcely exploited. Dry heat parboiling at high temperature for short time and low temperature for long time on physical and physicochemical properties of three rice varieties differing in amylose content were studied. Hardness of the kernels increased from 66.4 N, 68.8 N and 59.8 N in raw samples to 89.1 N, 86.9 N and 59.8 N in parboiled high amylose, low amylose and waxy rice samples respectively. Rapid migration and evaporation of water from severely heated kernels caused cavity formation at the centre. Irreversible damage of amylopectin structures to leachable fractions caused continuous rise of the pasting curve. Crystallinity was thereby reduced. Parboiled high amylose samples gave X-ray diffraction patterns with peaks characteristic of A, B and V-type starch crystallinity. Crystalline starch-lipid complexes were observed in low amylose and waxy rices. The significant increase in the amount of rapidly digestible starch from 56.7%, 61.7% and 66.6% in raw samples to 92.1%, 90.8% and 94.8% respectively in severely processed rice samples and subsequent reduction in resistant starch from 24.5%, 21.2% and 18.4% to 0.4%, 1.9% and 0.1% indicated possibilities for targeted food use of the dry heat parboiled samples.

Keywords: Dry heat parboiled rice, Assam, Starch, XRD, Digestibility

1. Introduction

1. Parboiling is a technique applied for quality enhancement of rice. Parboiling

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