再録　報文

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Evaluation of Staling of Cooked Rice by Kinetic Analysis of Texture Changes

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Abstract

Five polished rice varieties with different amylose contents were cooked, sealed, and stored at 4°C for 168 h. The slope of first-order plots of hardness and stickiness changed during storage; the change process was divided into two periods: the first and latter halves of the period, each with different rate constants. The rate constant of hardness increase in the first half period was greater for rice with a higher amylose content; conversely, in the latter half period, it was greater for rice with a lower amylose content. The rate constant for stickiness decrease in the latter half was greater than that in the first half, and the higher the amylose content, the larger the rate constant in both periods. By simulating a change in the stickiness–hardness ratio using kinetic parameters with texture changes, the time taken for the quality of cooked rice to deteriorate during storage was predicted.

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Meal rich in rapeseed oil increases 24-h fat oxidation more than meal rich in palm oil.

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要旨

The fatty acid composition of the diet has been linked to the prevalence of diabetes and cardiovascular diseases. Compared with monounsaturated fatty acids, saturated fatty acids decrease fat oxidation and diet-induced thermogenesis. A potential limitation of previous studies was the short duration (≦5h) of calorimetry used. The present study compared the effects of a meal rich in saturated and unsaturated fatty acids on 24-h of fat oxidation. Ten males participated in two sessions of indirect calorimetry in a whole-room metabolic chamber. At each session, subjects consumed three meals rich in palm oil (44.3% as saturated, 42.3% as monounsaturated and 13.4% as polyunsaturated fatty acid) or rapeseed oil (11.7% as saturated, 59.3% as monounsaturated and 29.0% as polyunsaturated fatty acid). Fat oxidation over 24-h was significantly higher in the meal rich in rapeseed oil (779 ± 202 kcal/day) than that rich in palm oil (703 ± 158 kcal/day, $P < 0.05$), although energy expenditure was similar between both meal conditions. Meal rich in unsaturated fatty acids increased the oxidation of exogenous and/or endogenous fat. The results of a long calorimetry period indicate that rapeseed oil offered an advantage toward increased 24-h fat oxidation in healthy young males.