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Variation of 2-Acetyl-1-Pyrroline Concentration in Aromatic Rice Grains Collected in the Same Region in Japan and Factors Affecting Its Concentration

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Abstract: Aroma strength of aromatic rice varies with the genetic and environmental conditions. We determined the concentration of 2-acetyl-1-pyrroline (2AP), a key compound of the aroma of aromatic rice, in 62 samples of rice grains (brown rice) from 'Hieri' produced by 17—24 farmers in 3 years in the Kubokawa area of Kochi Prefecture, Japan. Many of them showed similar values and the standard deviations were 27—31%. However, a few samples showed extremely high (200%) or low (60%) 2AP concentrations compared to the individual year averages (100%). The influence of harvest time and temperature during ripening on the 2AP concentration in the brown rice was also examined using two cultivars. During grain development in an early-heading cultivar 'Miyakaori' , the 2AP concentration in the brown rice reached a peak at 4 or 5 weeks after heading (WAH) and then decreased rapidly to 20% of the maximum at 7 or 8 WAH. In a late-heading cultivar 'Hieri', the 2AP concentration peaked at 4 WAH then gradually decreased to 40% of the maximum at 8 WAH. The 2AP concentration was higher in brown rice ripened at a low temperature (day : 25°C/night : 20°C) than that ripened at a high temperature (day: 35° C/night: 30°C) in both a short-grain cultivar 'Hieri' and a long-grain cultivar 'Sari Queen'.

Keywords: Aromatic rice, Harvest time, *Oryza sativa* L, 2-Acetyl-1-pyrroline,

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