

Department of Applied
Chemistry and Food Science

Key words

Food Science, Food Chemistry, Agricultural Products, Cereals, Rice, Buckwheat, Eggplant



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Education

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Professional Background

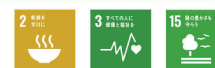
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Consultations, Lectures, and Collaborative Research Themes

Cereals, Noodles, Development of New Food Products

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Main research themes and their characteristics

[Accumulation Mechanism of Gamma-Amino Butyric Acid]

Gamma-aminobutyric acid is generally called GABA. GABA is the functional ingredient which improves lowering high blood pressure and curing the autonomic nervous system disorders. In addition, GABA promote the depth of the sleep and the clear waking up. Because of these effects the chocolate with GABA is commercially available.

Then glutamic acid decarboxylase (GAD) acts on glutaminic acid, GABA is produced. Some cereals and vegetables have GAD and GABA, so I study what kind of cereals and vegetables increase the GABA contents. I also study what kind of procedures make GABA contents increasing. Fig. 1 show the GABA accumulation of sealed brown rice by heating. GABA content was increased by about 3-fold by an hour heating. The same phenomena are detected with wheat, barley, the soba.

In this way, we can increase the quantity of GABA of agricultural products. So we are going to clarify the GABA accumulation mechanism.

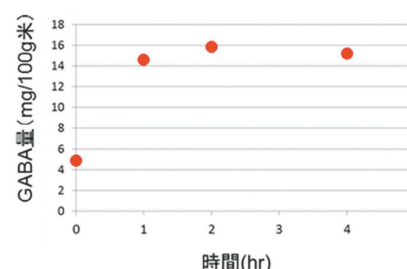


Fig.1 GABA content of brown rice by heating

[Quality of agricultural products in Fukui]

If we can show quantity of ingredients concerning with taste and functionality of agricultural products in Fukui, the price of these products may rise and the evaluation of these products may go up. Therefore we investigate the ingredients of agricultural products in Fukui concerning with taste and functionality. So we contribute to sales promotion.

At first we investigate eggplants and turnips in Fukui. We measure water content, Brix, free sugar (sucrose, fructose, glucose), the free amino acid (glycine, alanine, glutaminic acid, etc). There was little sucrose, and there were many fructose and glucose by measuring free sugar of 3 kind of eggplants. In addition, X eggplant revealed that fructose content were higher than glucose content. On the other hand, Y and Z eggplants revealed that fructose contents were as the same as glucose(Fig. 2). Fructose is different from glucose in a sweetness degree. Fructose is about 2 times sweet than glucose at room temperature. We assume that the sweetness of eggplants is not revealed by total sugar, but sugar composition.

Based on these knowledge, we will clarify the characteristic and differentiation of agricultural products in Fukui, and then contribute to sales promotion and regional vitalization.

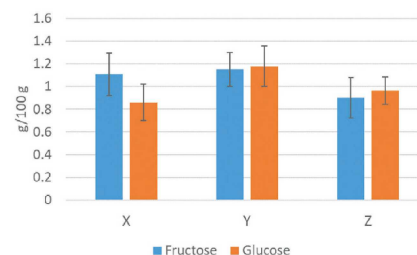


Fig.2 Fructose and glucose contents of eggplants

Major academic publications

Ohno, T., Tomatsu, M., Toeda, K., Ohisa, N.

"Gelatinization properties of aged rice and improvement of rice texture by external layer removal"
Food Science and Technology Research, 13, 301-304(2007)

Ohno, T., Tomatsu, M., Toeda, K., Ohisa, N.

"Texture of cooked rice prepared from aged rice and its improvement by reducing agents"
Bioscience, Biotechnology, and Biochemistry, 71, 2912-2920(2007)

Ohno, T., Ohisa, N.

Studies on textural and chemical changes in aged rice grains
Food Science and Technology Research, 11, 385 - 389(2005)