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A Lectin from the Edible and Medicinal Mushroom *Pleurotus ostreatus* (Jacq.: Fr.) Kumm. as a Food Intake Suppressing Substance

Hirokazu Kawagishi, Sumie Yokoyama, Hiroko Nakamura, and Sinji Tokuyama

Department of Applied Biological Chemistry, Faculty of Agriculture, Shizuoka University, 836 Ohya, Shizuoka 422-8529, Japan

In an experiment in which rats were allowed free access to food and water, the rats did not eat the diet containing the mushroom *Pleurotus ostreatus* (Jacq.: Fr.) Kumm. even if they were emaciated. A lectin (*P. ostreatus* lectin, POL) was isolated from the mushroom as the food intake-suppression principal factor. In hemagglutination inhibition assays Me aGalNAc was the most potent inhibitor among the monosaccharides tested. Among all the sugars tested, 2′-fucosyllactose (Fucal→2Galpl→4Glc) was the strongest inhibitor, and its inhibitory potency was five times greater than that of Me aGalNAc. POL exhibited binding ability to BSM and asialo-BSM whereas the other glycoproteins were inert to binding. The intake-food suppressing activity of POL was dependent on the dose. A diet containing 0.1% of POL caused a 50% decrease of food intake by rats compared to the control.

Although food intake-suppression activity always existed in one fraction at each chromatography, the specific activity did not increase greatly. Therefore, we thought of the possibility of an activator, which did not have the food intake-suppression activity itself but promoted the activity of POL, and tried to prove the existence of the activator(s). As a result, a protein was isolated as the activator from this mushroom. In addition, after direct administration of the purified lectin to rats stomachs using a catheter, the rats did not eat even the basal diet.

For the molecular cloning of cDNA encoding POL, the cDNA liberally was constructed from the fruiting body of this mushroom with an X, ZAP II expression system. Screening for the cDNA was done with the antiserum prepared from purified POL.

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