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武庫川女子大紀要（自然科学）

Application to Food of *Lentinus edodes* Flour with Extrusion Cooking

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We report the application to food using *Lentinus edodes* (Shiitake) flour, which is a good vegetable for health, rich in protein, fiber and vitamins (B_1, B_2, niacin). The wheat flour contained *Lentinus edodes* flour was expansed and textured by a twin screw extruder. The snack contained 1% *Lentinus edodes* flour was most prefered in the points of taste, flavor, color and appearance.

Introduction

Many countries have already started commercial cultivation of the mushroom[1)-3)]. *Lentinus edodes* (Shiitake) is a good vegetable for health, rich in protein, fiber and vitamins (B_1, B_2, niacin). Dried *Lentinus edodes* have also been consumed. However, almost refuse such as stipe of *Lentinus edodes* is discarded. Thus, we have tried a extrusion cooking using a twin screw extruder to make attractive edible foods with refuse of *Lentinus edodes*[4)].

Herein we examined the application of expansion and extrusion cooking using a twin screw extruder with *Lentinus edodes* flour.

Materials and Methods

Lentinus edodes flour

Lentinus edodes flour was prepeared from parts of stipe and refuse with mixer, and the flour was used for extrusion cooking.

Extrusion cooking

The expansion was done as follows condition ; sample 26 g/min, temperature 160℃, pressure 50 kg/cm with Laboruder (Nippon Seikousyo, Ltd., Hiroshima). Wheat flours contained each 0, 1, 5 and 10% *Lentinus edodes* flour were used.

Results and Discussion

Extrusion cooking

We tried the application of expansion and extrusion cooking using a twin screw extruder to make attractive edible foods with *Lentinus edodes* flour. As shown in Fig. 1, wheat flours contained *Lentinus edodes* flour were expanded by a twin screw extruder.

Food sensory test

With the food sensory test, wheat flour contained 1% *Lentinus edodes* flour was most prefered by many girl students in the points of taste, flavor, color and appearance as shown in Fig. 2. Whereas only wheat flour was prefered in the points of flavor, color and appearance, but not taste. Five percent of that was prefered in the point of taste, and 10% of that was taste and crisp. In the points of taste and flavor, both of 5% and 10% of the extruded

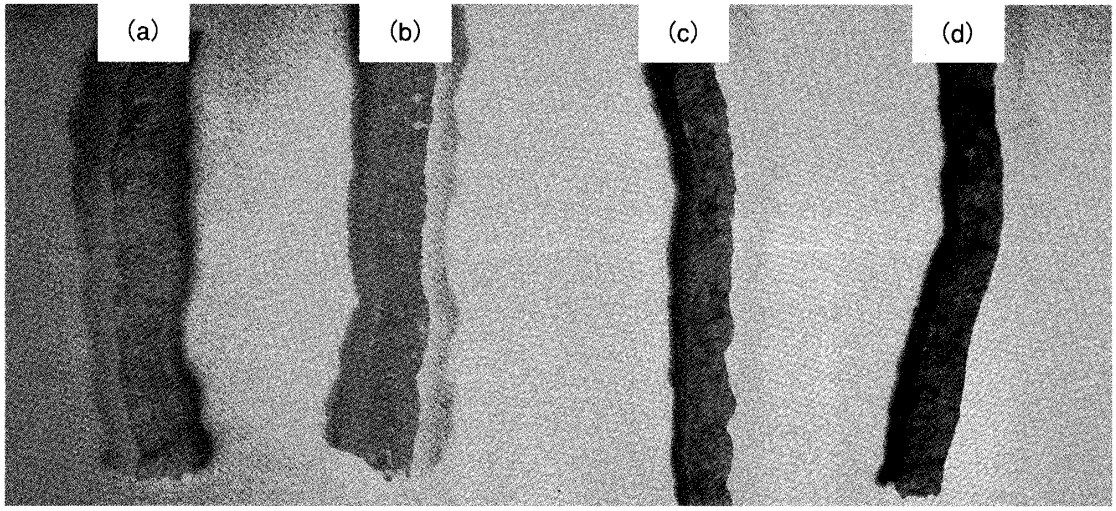

Fig.1. Extruded puffed snack
Extruded snack was made from 0%(a), 1%(b), 5%(c) and 10%(d) *Lentinus edodes* flour with wheat flour.

snack were not prefered better than 1%. It may be that 5% and 10% of that are too strong in regard to taste and flavor of Shiitake to be prefered in the case of the food with extrusion cooking. However, the extruded snack with *Lentinus edodes* flour improved taste. And also it may be that the students don't like brown−color of 5% and 10% in the points of color and appearance.

The expanded, extruded snack has been commercially developed. Being a good vegetable for health, rich in protein, fiber and vitamins (B_1, B_2, niacin), refuse such as stipe of *Lentinus edodes* could use as a new food material.

This is the first report on the application to foods using refuse of *Lentinus edodes*.

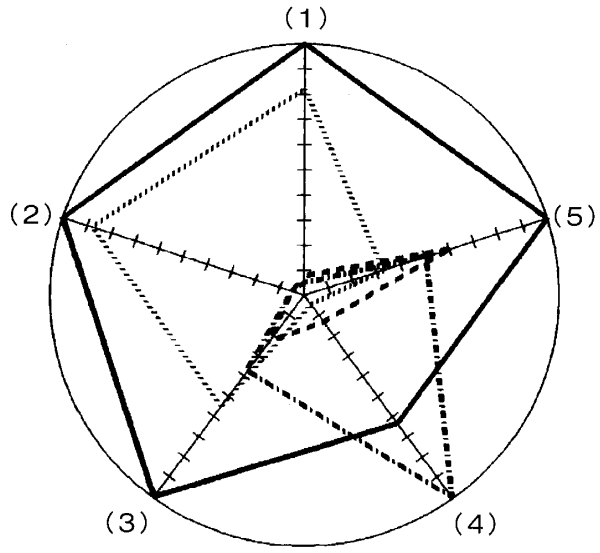

Fig.2. Sensory test for food of extrusion cooking
The food sensory test was done in the points of appearance(1), color(2), flavor(3), crisp(4) and taste(5). ····· 0%, ——— 1%, - - - - 5%, ▪▪▪▪ 10%.

Acknowledgments

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