

## 【総説】

きのこの発酵能による機能性食品の開発

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Development of functional foods by mushroom fermentation

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[Abstract]

Diseases such as thrombosis and cancer are difficult to cure; it is thought that it is desirable to prevent their onset by developing healthy everyday eating habits from the viewpoint of medical and dietary sources and preventive medicine. From ancient times to the present, alcoholic beverages such as sake, beer and wine have been made by yeast fermentation. However, we identified the presence of alcohol dehydrogenase and lactate dehydrogenase in mushrooms, and also confirmed the existence of amylase, protease and milk clotting enzyme. I conducted research aimed at the development of functional foods that show fibrinolytic activity and antithrombin activity in many mushrooms and show effects on thrombosis such as myocardial infarction and cerebral thrombosis. Alcoholic fermentation was carried out using mushrooms having alcohol dehydrogenase instead of yeast, and production of functional wine, beer and sake was attempted. Furthermore, fermentation was carried out using mushrooms containing lactate dehydrogenase, crude enzyme, amylase, and protease. We then prepared cheese, miso, fermented soybeans, fermented plums, fermented soybean milk, and fermented meat having new functionality. As a result, fibrinolytic activity, antithrombin activity and antioxidant activity were found in these fermented foods.

**Key words:** Fermentation, Fermented food, Functional food, Mushroom

[摘要]

血栓症やガンなどの疾病は完治させることが難しく、医食同源・予防医学の観点に立ち、毎日の食生活からの発症を防ぐことが望ましいと考えられる。古来から現在に至るまで、清酒、ビール、ワインなどのアルコール飲料は、酵母のアルコール発酵によってつくられている。しかしながら、きのこにアルコール脱水素酵素や乳酸脱水素酵素が存在していることを発見し、アミラーゼ、プロテアーゼ、凝乳酵素の存在も確認した。多くのきのこに線溶活性および抗トロンビン活性が認められ、心筋梗塞や脳血栓などの血栓症予防に効果を示す機能性食品の開発を目指す研究を行った。酵母の代わりにアルコール脱水素酵素を有するきのこを用いてアルコール発酵を行い、機能性を有するワイン、ビール、清酒の生産を試みた。さらに、乳酸脱水素酵素、凝乳酵素、アミラーゼ、プロテアーゼなどが存在するきのこを用いて発酵を行い、新たな機能性を有するチーズ、味噌、発酵大豆、発酵梅、発酵豆乳、発酵肉などを調製した。その結果、これらの発酵食品中には、線溶活性、抗トロンビン活性、抗酸化活性が認められた。