URN etd-0407109-183715-1186
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Statistics This thesis had been viewed 54 times. Download 43 times.
Department
Year 2003
Semester 2
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title Study on the Bioactivities of Tremella flava by Liquid Culture Fermentation
Date of Defense 0000-00-00
Page Count 104
Keyword
Tremella flava

Abstract

The purpose of this study is aimed to explore the bioactivities of Tremella flava by liquid culture fermentation, to increase the productivity of the polysaccharides by bioreactor, and to analyze the structure of polysaccharide by Fourier Transform Infrared Spectroscopy. In the study of growth condition, the optimal initial pH was 7.0 at 22~26℃, and the carbon source was glucose, while nitrogen source was yeast extract. When the ratio of carbon source and nitrogen source was designed to 3:1, the productivity of the polysaccharides was up to 0.0065g/ml in 100/250 ml flask. Moreover, the polysaccharides produced in 5L fermentor increased to be 0.033g/ml by feed bath condition with glucose. The same condition used in 100L fermentor, the polysaccharides were harvested up to 0.04g/ml and were dried for further diets sources of animal test.

In the experiment of animal test, the high serum cholesterol and sugar of male ICR mice were fed diets containing 1%, 3%, and 10% doses of fermented and dried T. flava polysaccharides and basidiocarps of T. fuciformis for four weeks. After four weeks of polysaccharides diet consumption, the concentration of total cholesterol in mice was significantly decreased. The result proved that both of Tremella polysaccharides could be help of decreasing the serum cholesterol, sugar, and triglyceride of male ICR mice.

Polysaccharides of T. flava extracted by hot water was separated by using size exclusion high performance liquid chromatography (SE-HPLC), and which showed a molecular weight higher than 1.41x106 Da. The data of gas liquid chromatography showed the mole ration of glucose: mannose: xylose: arabinose was 1:1.824:0.374:0.176 by liquid culture fermentation of T. flava as well as 1:2.051:1.878:0.449 by basidiocarps of T. fuciformis. The profile of Fourier Transform Infrared Spectroscopy showed that water polysaccharides of cells contained OH, C-H, C=H, C=C, C-O, -CH-O-CH-, differing from that of fermented liquid which did not contained C-H and C=O groups.
Advisory Committee - advisor

Files etd-0407109-183715-1186-001.pdf

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Date of Submission 2004-07-23