

Inhibitory effects of water-soluble low-molecular-weight β -(1,3–1,6) D-glucan purified from *Aureobasidium pullulans* GM-NH-1A1 strain on food allergic reactions in mice

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Abstract

There have been a number of reports showing that the crude β -glucan fraction prepared from various kinds of Basidiomycetes mushrooms acts as anti-cancer and anti-allergic reagent through stimulation of IFN- γ production. It has been reported, however, that the exposure of the airway to β -(1,3) D-glucan, contained in house dust, indoor moulds and some bacteria, potentiates the airway allergic response. It seems likely that the discrepant effects on immune function may be related to such factors as differences of the administration route, average molecular weight and water solubility. We isolated a new low-molecular-weight (about 100 kDa) β -glucan from *Aureobasidium pullulans* 1A1 strain of black yeast, and found that it had low viscosity and was water-soluble. In this study, we examined the effects of water-soluble low-molecular-weight β -(1 \rightarrow 3) and 50–80% branched β -(1 \rightarrow 6) glucan (LMW- β -Glucan) isolated from *A. pullulans* on the ova-albumin (OVA)-treated allergic reaction in mice. Feeding standard laboratory diets containing 0.5 and 1% LMW- β -Glucan significantly inhibited the OVA-specific IgE elevation compared to that in OVA-sensitized mice fed standard laboratory diet alone (control). Furthermore, feeding standard laboratory diets containing 0.5 and 1% LMW- β -Glucan inhibited the reduction of IL-12 and IFN- γ production from splenocytes and the reduction of CD8- and IFN- γ -positive cell number in the small intestine of the OVA-sensitized mice. These findings suggest that anti-food allergic action of LMW- β -Glucan may be due to the inducing IFN- γ production in the small intestine and splenocytes.

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1. Introduction

There are a number of reports regarding the polysaccharide (β -glucan) fraction prepared from various kinds of Basidiomycetes mushrooms as anti-cancer agents having the biological response modifier (BRM) effect [1–3]. On the other hand, it has been reported that

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