



Reduce the Allergenicity of Egg White Proteins by Fermentation

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Summary

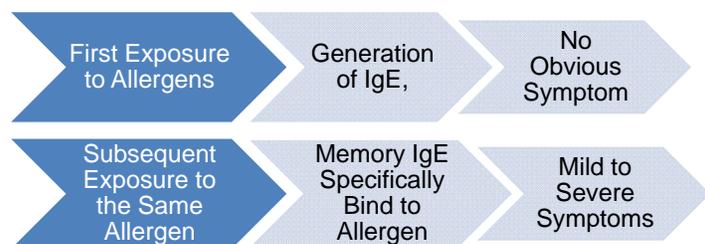
We successfully grown lactic acid bacteria in egg white, including some strains from sourdough or yogurt. After 96h of fermentation, egg white that was fermented with *L.delbrueckii.subsp delbrueckii* retained around 50% of its original allergenicity.

Introduction

As the determination methods and/or definitions differ, the estimate of egg allergy prevalence ranges from 1.6% to 3.2%. Egg allergy is the second most common food allergy in infants and young children.

The clinical symptoms of egg allergy involve: atopic dermatitis, asthma, vomiting, and diarrhea.

The following flow chart shows the mechanism of immune reactions that happen to food allergy patients.



Egg white provides superb functional properties, such as emulsion and foaming capacity; therefore, it has been widely added to various types of food. As a result, egg allergy patients should avoid ingesting food products that contain egg white.



Objective

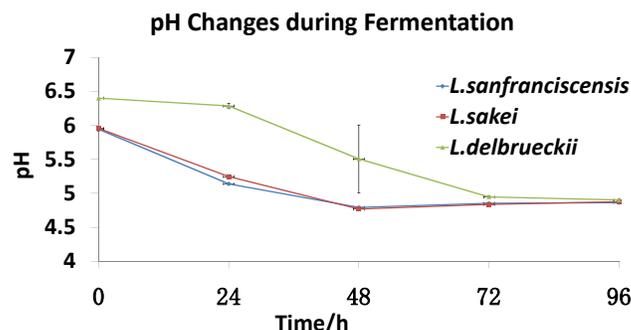
Grow lactic acid bacteria in egg white and choose the strains that can reduce the allergenicity of egg white proteins during fermentation.

Materials and Methods

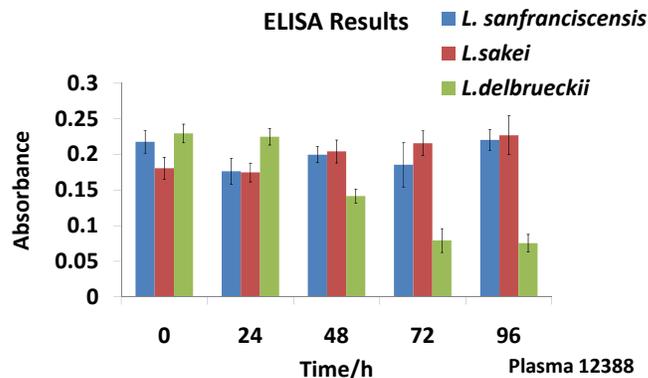
- ❖ The growth of lactobacilli is determined by cell counts of bacteria and pH changes of egg white solution during fermentation.
- ❖ ELISA assay employs plasma from 4 egg allergy patients to check the allergenicity of fermented egg white proteins.
- ❖ Amino nitrogen content and free thiol groups were detected to reveal the modifications of egg white proteins during fermentation.
- ❖ SDS-PAGE shows the molecular weight changes of egg white protein during fermentation.

Results

The production of lactic acid and the decrease in pH of substrate is one of the most important indicators for detecting the growth of lactobacilli.



Egg white fermented with *L. delbrueckii subsp. delbrueckii* retained less binding capacity to IgE from egg allergy patients after 48h fermentation.



Benefits

Provide a new approach to produce innovative egg products.

Discover a new method to reduce the allergenicity of egg white and enable the production of hypo-allergenic food with egg white as an additive.

Acknowledgements

We acknowledge the support from Alberta Poultry Research Center.

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