



Ovomucin: potential prebiotics from egg white

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Project timeline: June 2012 – May 2013

Summary

- ◆ Prebiotics have beneficial effects on human health.
- ◆ This research was designed to investigate whether ovomucin has prebiotic activity, which can broaden the application of ovomucin in food industry and increase the value of eggs.

Introduction

- Bifidobacteria have been considered to be one of the most important bacteria for human health due to their beneficial effects.
- Prebiotics are non-digestible food ingredients, which can selectively stimulate the growth of health-promoting bacteria.
- Ovomucin is a mucin-type glycoprotein from egg white which contains many carbohydrates. Thus, it has a great potential to possess prebiotic activity and to be nutritional supplements or functional foods.

Objectives

Specific objectives were to:

- 1) Investigate whether ovomucin could stimulate the growth of bifidobacteria;
- 2) Assess the prebiotic activity of ovomucin;
- 3) Develop new prebiotics and broaden the application of ovomucin in food industry.

Our Approach

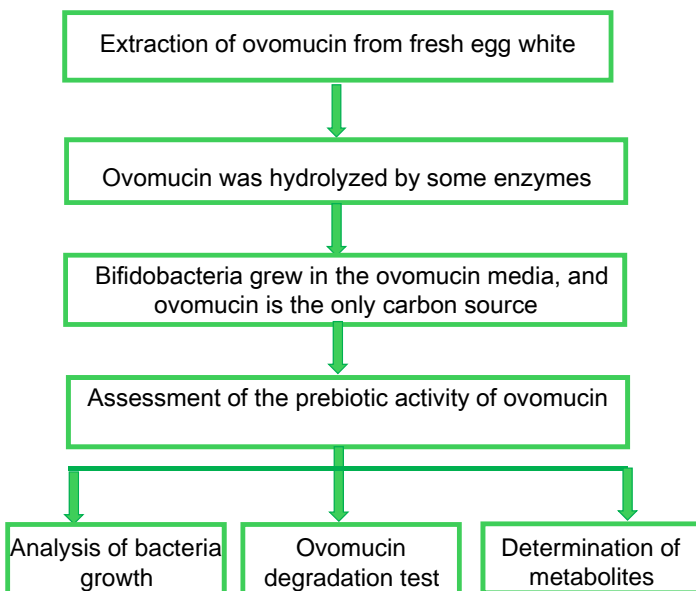


Fig. 1 schematic diagram of experimental procedure

Our Observations

The growth of Bifidobacteria in ovomucin media

Ovomucin hydrolyzed by pepsin and pancreatin promoted the growth of bifidobacterium infantis

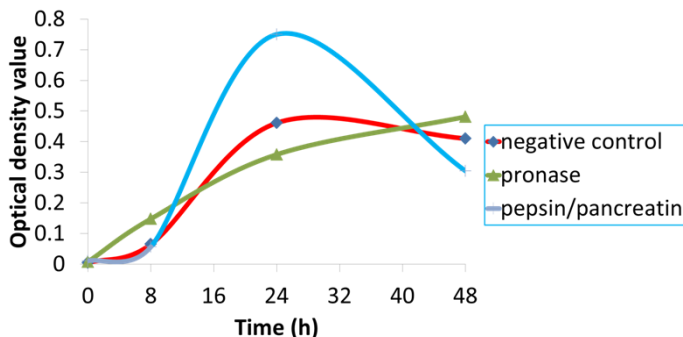


Fig. 2 The growth of bifidobacteria in different media

Sugars in ovomucin used by bifidobacteria

Some sugars in ovomucin (peak 1, 3 and 4) were consumed by bifidobacteria

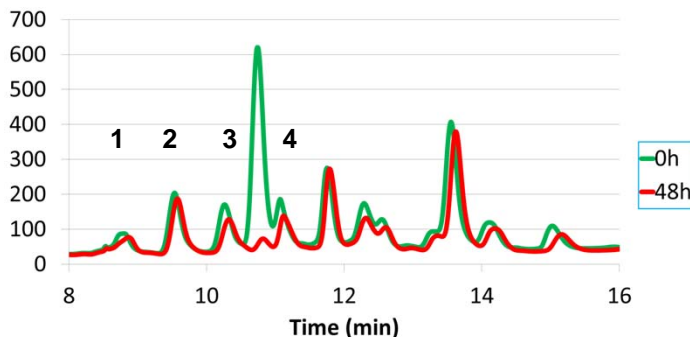


Fig. 3 Changes of sugar contents in ovomucin after fermentation

What Does this mean?

- Ovomucin contributes to the growth of bifidobacteria
- Ovomucin showed prebiotic activity
- In future work, different enzymes will be applied to further increase the prebiotic activity of ovomucin.

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