

ALLERGIC REACTIONS LINKED TO CONSUMPTION OF GOS

1. Is GOS a permitted food ingredient? Is it only present in food products sold in Singapore?

GOS is a permitted food ingredient in many countries including Singapore, Australia, New Zealand, Europe, United States and Asian countries such as China, Japan, Indonesia, Malaysia and Thailand.

As a permitted food ingredient, GOS can be added to any foods including infant formula. Currently, GOS has been added to major infant, children and maternal milk brands.

2. How is GOS different from the other food allergens?

Unlike protein which has been established as a common cause of food allergy, GOS is a type of carbohydrate and is not well documented to cause food allergy.

3. What is atopy?

Atopy is a genetic tendency of an individual to become sensitised to allergens commonly occurring in the environment. As a consequence, such individuals can develop typical symptoms of asthma, allergic rhinitis or atopic dermatitis (eczema) in response to the allergens.

4. Have there been any reports of allergy cases due to the consumption of GOS overseas?

Although available in consumer products globally, reports of allergic reactions and anaphylaxis to GOS have been confined to the Asian region - Japan¹, Singapore², Malaysia and Thailand (unpublished) and likely Vietnam.³

The specific geographical restriction of GOS allergy cases to Japan and the South-East Asian region may suggest certain predisposing factors confined to these regions. More research is required to ascertain how GOS causes food allergy reaction. Our local clinicians are conducting further studies to better understand the mechanism of the GOS in triggering the allergic reactions. We will continue to closely monitor the situation.

5. What is the public health risk?

Based on the local study, the estimated prevalence is likely to be up to 3.5% of individuals aged 5 to 60 years with a history of atopy or allergic conditions such as atopic dermatitis (eczema), allergic rhinitis, or asthma. While there have been three cases reported in atopic individuals aged 2 to 5 years, there have been no cases reported in individuals aged less than 2 years.

¹ Kaneko K, Watanabe Y, Kimura K, Matsumoto K, Mizobuchi T, Onoue M. Development of hypoallergenic galactooligosaccharides on the basis of allergen analysis. *Biosci Biotechnol Biochem* 2014;78:100–108.

² Chiang WC, Huang CH, Llanora GV, Gerez I, Goh SH, Shek LP et al. Anaphylaxis to cow's milk formula containing short-chain galacto-oligosaccharide. *J Allergy Clin Immunol* 2012;130:1361–1367

³ Soh JY, Huang C-H, Chiang WC, Llanora GV, Lee AJ, Loh W, Chin YLC, Tay VYJ, Chan YH, Dianne D, Lee BW. Anaphylaxis to galacto-oligosaccharides – an evaluation in an atopic population in Singapore. *Allergy* 2015; DOI: 10.1111/all.12645.

6. What is the local prevalence of food allergies in Singapore?

The following table shows the prevalence of specific food allergies in Singapore, based on local studies.⁴

Table: Prevalence of specific IgE-mediated food allergies in Singapore

Prevalence of specific Ig-E mediated food allergies in Singapore		
Allergen	Age Group	Prevalence (%)
Shellfish	4 - 6 years	1.19
	14 – 16 years	5.23
Peanut	4 - 6 years	0.64
	14 – 16 years	0.47
Tree nut	4-6 years	0.28
	14 – 16 years	0.30
Fish	14 – 16 years	0.26
Egg	11 – 30 months	1.8
Cow's milk	11 – 30 months	0.5

7. What is AVA and MOH's advice to the public? Should we avoid all food products with GOS, to be safe?

Consumers should not be alarmed and avoid products containing GOS unnecessarily. As with any other food allergen, before deciding to exclude any food products from the diet, consumers should consult a specialist experienced in treating food allergies (e.g. allergist/immunologist) to identify specific food allergens. The public can find out if a food product contains GOS by reading the statement of ingredients on the product labels, under the term 'galacto-oligosaccharides'.

Healthy non-allergic individuals are not likely to develop allergic reactions due to the consumption of GOS. Consumers who had previously consumed, or who are currently consuming GOS products with no allergic reactions, are highly unlikely to have GOS allergy.

Consumers with a history of atopy or allergic conditions such as atopic dermatitis (eczema), allergic rhinitis or asthma are advised to exercise vigilance when consuming products containing GOS for the first time.

We advise consumers who encounter an allergic reaction to seek medical attention. If a severe reaction is experienced, they should seek immediate medical treatment at the nearest hospital. As part of follow-up, the patient may be referred to a specialist experienced in treating food allergies for a detailed evaluation to be carried out.

8. I/My child consumed a milk formulation containing GOS a few times before this. Should I/ my child stop taking it?

To date, all cases developed allergic reactions on consuming GOS for the first time. If you/ your child have consumed it once or twice without experiencing any of the above symptoms,

⁴ Lee AJ, Shek LP. Food Allergy in Singapore: opening a new chapter. Singapore Med J 2014; 55(5): 244-247

it is highly unlikely that you/ your child have an allergy to GOS, and there is no issue in continuing to consume it. There have been no reports of GOS allergy in children below the age of 2 years.

9. Is GOS currently listed in food labels?

If a food product contains GOS, GOS needs to be declared in the statement of ingredient. The public can find out if a food product contains GOS by reading the statement of ingredients on the product labels, under term 'galacto-oligosaccharides'. Currently, the Food Regulations do not specify additional labelling requirements (e.g. warning statement) for food products containing allergens, which is in line with international practices.

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