



ASEAN NUTRITION DAY

Frequently Asked Questions Milk Fat Globule Membrane (MFGM)

Organised By:



How is MFGM digested and metabolized?

- MFGM is not absorbed in its entirety in the GI tract.
- Before being absorbed, MFGM is broken down by digestive enzymes:
 - » MFGM protein components into peptides and amino acids
 - » MFGM lipid components such as sphingomyelin into sphingosine
- Upon absorption by the intestinal epithelium, these broken-down components are reassembled and then enter circulation.
- There are still many peptides and lipid components of MFGM which have yet to be fully characterized. Hence, future metabolomic studies involving metabolites are important.

How is MFGM manufactured and supplemented in infant formula?

- MFGM-enriched ingredients may be sourced by simply concentrating the MFGM whey produced as part of the cheese-making process.

How stable is MFGM in infant formula?

- Studies based on evaluating sphingomyelin in MFGM-enriched raw materials and MFGM-supplemented infant formulas have shown MFGM to be stable for 2 years.

What is the safety data of MFGM-enriched ingredients added into infant formula?

- Clinical studies conducted with infant formula supplemented with MFGM-enriched ingredients reported no severe adverse events, hence considered safe.

What are the similarities and differences between human MFGM and supplemented bovine MFGM?

- Structurally, there may be some differences given that human MFGM exists as part of the milk fat globule while the MFGM added into infant formula are extracted fragments of membranes from cow's milk.
- Mechanistically, the digestion and absorption of human MFGM and bovine MFGM are largely similar.
- Clinically, the functional benefits of supplemented bovine MFGM are trending towards those of human MFGM, hence considered similar.

Is there any difference in MFGM from colostrum between preterm and term mothers?

- MFGM from colostrum of term mothers has higher cholesterol and polar lipids. However, the distribution of phospholipids is similar.

What maternal factors may affect MFGM?

- Available evidence very limited.

Why is sphingomyelin chosen as a marker for MFGM?

- MFGM is complex with multiple components.
- MFGM proteins could not be used due to current lack of commercially available, validated analytical methods.
- Sphingomyelin is not found in non-dairy sources of phospholipids, hence its level could be linked to the MFGM phospholipids.

Is there a role of MFGM on visual development in infants?

- Available evidence is very limited and emerging.
- A correlation study showed that level of plasma sphingosine is inversely related to the severity of retinopathy in preterm infants.

Is there any evidence on the role of MFGM on intestinal inflammation or short bowel syndrome?

- No evidence on short bowel syndrome.
- Preclinical study on rat models showed MFGM pretreatment decreased LPS-induced intestinal inflammation.

Does MFGM have a role on gut microbiome which may impact autism?

- MFGM has been shown to favourably shape the gut microbiota and increase short chain fatty acids.
- Limited clinical evidence on relationship between MFGM and autism.

Is there any connection between MFGM and cow's milk protein allergy?

- Based on very limited evidence, MFGM has not been reported to induce or treat cow's milk protein.

Is there a role for MFGM in adults?

- There is potential benefits for ageing related cognitive function but the evidence is still emerging.



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*All content has been provided by **Key Opinion Leaders** in the area **Milk Fat Globule Membrane** as a part of Mead Johnson (Asia Pacific) Pte Ltd's medical education initiatives