

Infants Gut Microbiota Development & Connection to Immunity:

Rebalancing gut microbiota in C-section born infants to support immune system development.



The gut microbiota is crucial for shaping the immune system, particularly during the first **1000 days of life**, when the infant's immune and GI systems are still immature.^{1,2}

70% of immune cells that are part of our immune system are in the gut.²⁻⁴

C-section delivered infants may have an increased risk of **immune and metabolic diseases later in life** due to compromised and delayed gut microbiota colonization, especially of *Bifidobacterium* and *Bacteroides*.⁵⁻⁷



Breast milk plays a vital role in supporting the development of a healthy gut microbiota and immune system.⁸⁻¹⁰

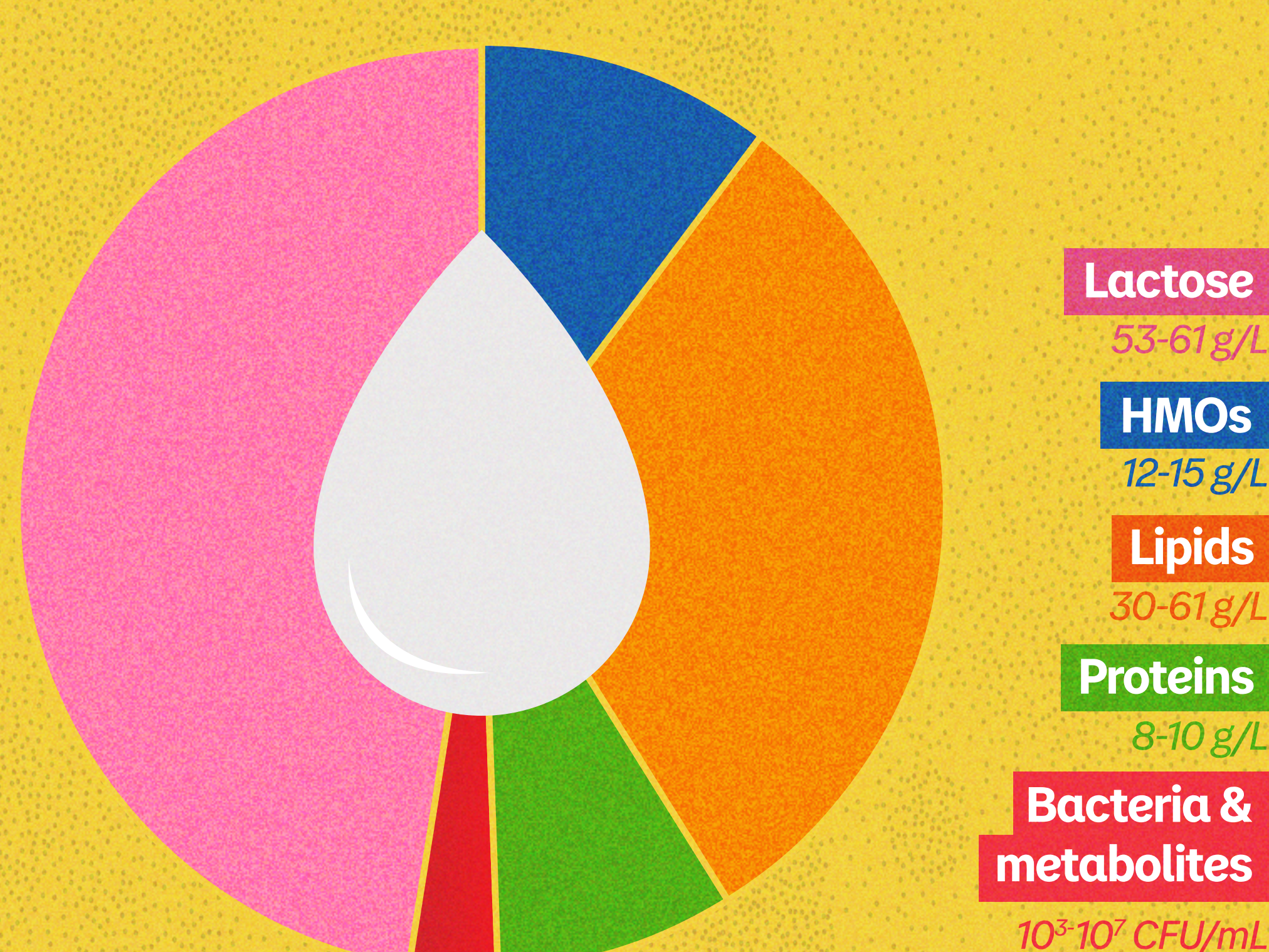
Human Milk Oligosaccharides (HMOs)

- Prebiotic effect^{11,12}
- Direct effect on immune cells¹⁴
- Block route of infection¹³
- Brain building blocks¹⁵

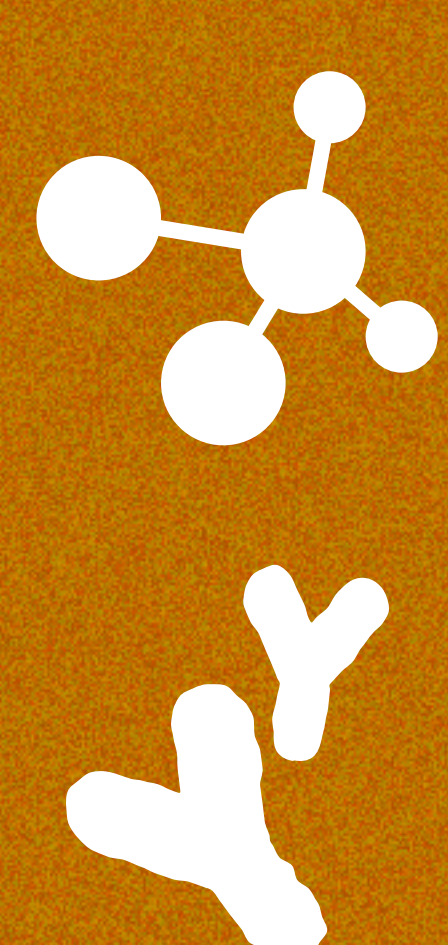
Bacteria and their metabolites

- Prebiotic and postbiotic effects, for gut and immune benefits^{16, 17}

HUMAN MILK COMPOSITION



Specialized nutrition strategies, such as those containing a synbiotic mix of scGOS/lcFOS (9:1) and *B.breve* M-16V, can offer an opportunity to restore the compromised gut microbiota in C-section born infants who are not exclusively breastfed.^{14, 15}



scGOS/lcFOS

- Prebiotic effect²⁰
- Immune Modulation²⁰⁻²¹

B.breve M-16V

- Probiotic effect¹²⁻¹⁸
- Immune Modulation¹⁹

RCT 1



STUDY POPULATION: 🇸🇪 🇨🇳 N=153

Healthy term infants born by C-section*.

STUDY CONCLUSIONS:

This dedicated study on C-section delivered infants showed that the unique synbiotic supplementation restores bifidobacterial levels and promotes gut condition similar to that of vaginally born infants. Additionally, it significantly reduced skin-related disorders, including eczema.²²

RCT 2



STUDY POPULATION: 🇨🇳 N=284

Healthy term infants born vaginally and by C-section* (subgroup analysis on C-section 54.8%)

STUDY CONCLUSIONS:

This study confirmed the effect of the unique synbiotic on the gut microbiota, with restoration of bifidobacterial levels and other bacterial species (e.g. *Bacteroides*).²³

Observational Study



STUDY POPULATION: 🇨🇳 N=120

Healthy term C-section* infants.

STUDY CONCLUSIONS:

In a real-world setting, the specific synbiotic supplementation supports the findings of gut microbiota restoration observed in the clinical studies. Additionally, this unique synbiotic supplementation may potentially support immune development as parent-reported illness episodes were significantly reduced at 12 months.

*All C-sections were elective

These studies demonstrate the crucial link between infant gut microbiota and immune development. Supplementing C-section born infants who are not exclusively breastfed with a unique synbiotic formula (scGOS/lcFOS and *B.breve* M-16V) can **restore *Bifidobacterium* levels** to those typically found in vaginally born infants, potentially supporting healthier immune development.



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