Human milk – the only food solely designed for human consumption
Nutrition during infancy is a key factor to lay the foundation for optimal development of a child. Human milk is accepted as the “gold standard” for infant nutrition. When compared with infant formula, breast-feeding leads to favorable results with respect to growth patterns, nutritional status, immune protection and long-term developmental outcomes. Thus a lot of efforts are made to narrow the nutritional gap between human milk and infant milk formula, which are mostly based on cow’s milk. Human milk oligosaccharides (HMO) have been identified as a key differentiating factor between human and bovine milk. They are complex carbohydrates which make up the third largest solid component of human milk. 2’-FL (2’-Fucosyllactose) is the most abundant oligosaccharide occurring in human milk, accounting for 30% of all HMOs present.

Macronutrients in cow’s milk and human breast milk (g/liter)

<table>
<thead>
<tr>
<th>Oligosaccharides</th>
<th>Cow’s milk</th>
<th>Human breast milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactose</td>
<td>48</td>
<td>70</td>
</tr>
<tr>
<td>Proteins</td>
<td>32</td>
<td>8</td>
</tr>
<tr>
<td>Lipids</td>
<td>37</td>
<td>41</td>
</tr>
</tbody>
</table>

2’-FL is the most abundant oligosaccharide in human milk and makes up to 20 – 30% of the total HMO content.
Benefits of 2’-FL – during early life and beyond

Results of clinical trials and preclinical models have shown that 2’-FL has the potential to support and maintain health in various ways.*

Support immune modulatory functions (allergies/asthma)  
Help brain development & cognitive abilities  
Strengthen gut maturation, intestinal barrier & digestive comfort  
Nourish the beneficial microbiota (bifidogenic effect)

Solid scientific foundation & progress for the category

- Complete in-house development of PREBILACTM 2’-FL from strain development to downstream processing using a fermentation strain designed for efficient large-scale production
- Research platforms for biocatalytics & novel strain development technologies
- Collaboration with global thought leaders in HMO and microbiome research
- Partnering for clinical trials with selected customers

Uncompromised safety & quality

- Selection of stable fermentation strains enables consistent quality of PREBILACTM 2’-FL, without the use of antibiotics during production
- State of the art analytics competence center and renowned BASF toxicology department
- Long-standing expertise in health ingredients for serving food & supplement markets (including specific regulatory & quality requirements for infant nutrition)

Supply reliability & sustainable business development

- BASF leadership in production technology & operative excellence ensures reliable and most efficient production set-up with continuous optimization
- BASF’s upscaling capabilities provide flexibility to consistently meet customer needs
- Large scale German based production enables global roll-out

BASF has achieved milestones to manufacture PREBILACTM 2’-FL at the quality and volume levels necessary to supply global infant formula markets.

For information on claims intended to be used in product marketing in specific countries please contact your BASF representative.

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* References: Akkerman R. et al. (2018); Alliet P et al. (2016); Aubran CA et al. (2016); Bienenstock J et al. (2013); Bode L (2012); Ellison E et al. (2016); Geuhl RG et al. (2016); Jantscher-Krenn E et al. (2012); Laucirica DR et al. (2017); Marriage BJ et al (2015); Oliveros E et al. (2016); Puccio G et al (2017); Vazquez E et al (2015, 2016).