

## AB019. 2'-fucosyllactose: a common human milk oligosaccharide with uncommon effects

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**Abstract:** Human milk (HM) is a complex matrix containing numerous unique components compared to infant formula. One such group of components, human milk oligosaccharides (HMO), is abundant in HM and only exceeded in amount by lipid and lactose. Of the various HMOs, the most predominant HMO in HM is commonly 2'-fucosyllactose (2'FL). The increased availability of selected synthesized HMOs in recent years has allowed for the opportunity to study the preclinical and clinical effects of some of these compelling oligosaccharides. This presentation will review the roles of 2'FL as well as reviewing the emerging science as it relates to the young infant. Preclinical work supports 2'FL as a prebiotic, immune modulator, and a potential anti-nociceptive by regulating colonic contractions in mice. Additionally, more

recent emerging preclinical research in rodents supports that 2'FL enhances cognition via the gut-brain axis. Learning and memory skills in both young and adult rodents that are dependent on the integrity of the vagus nerve appear to be impacted by 2'FL feeding. Recent clinical research has revealed that infants fed infant formula with 2'FL during the first 4 months of life exhibited innate immune responses closer to those of HM-fed infants than did infants fed formula without 2'FL. This included decreased levels of circulating innate inflammatory cytokines IL-1ra, IL-1 $\alpha$ , IL-1 $\beta$ , IL-6, and TNF- $\alpha$  in HM- and 2'FL formula-fed infants. Additionally, unlike those from infants fed formula without 2'FL, ex vivo peripheral blood mononuclear cell cultures from HM- and 2'FL-fed infants had decreased concentrations of innate inflammatory cytokines IL-1ra, IL-1 $\beta$ , IL-6, TNF- $\alpha$ , and IFN- $\gamma$  at 48 hours post respiratory syncytial virus infection. New preclinical and clinical work continues to reveal new functions of 2'FL. (Research funded by Abbott Nutrition, Abbott Laboratories).

**Keywords:** 2'-fucosyllactose; human milk oligosaccharide; infant

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