Study shows maternal diet alters the breast milk microbiome and microbial gene content

February 2 2016

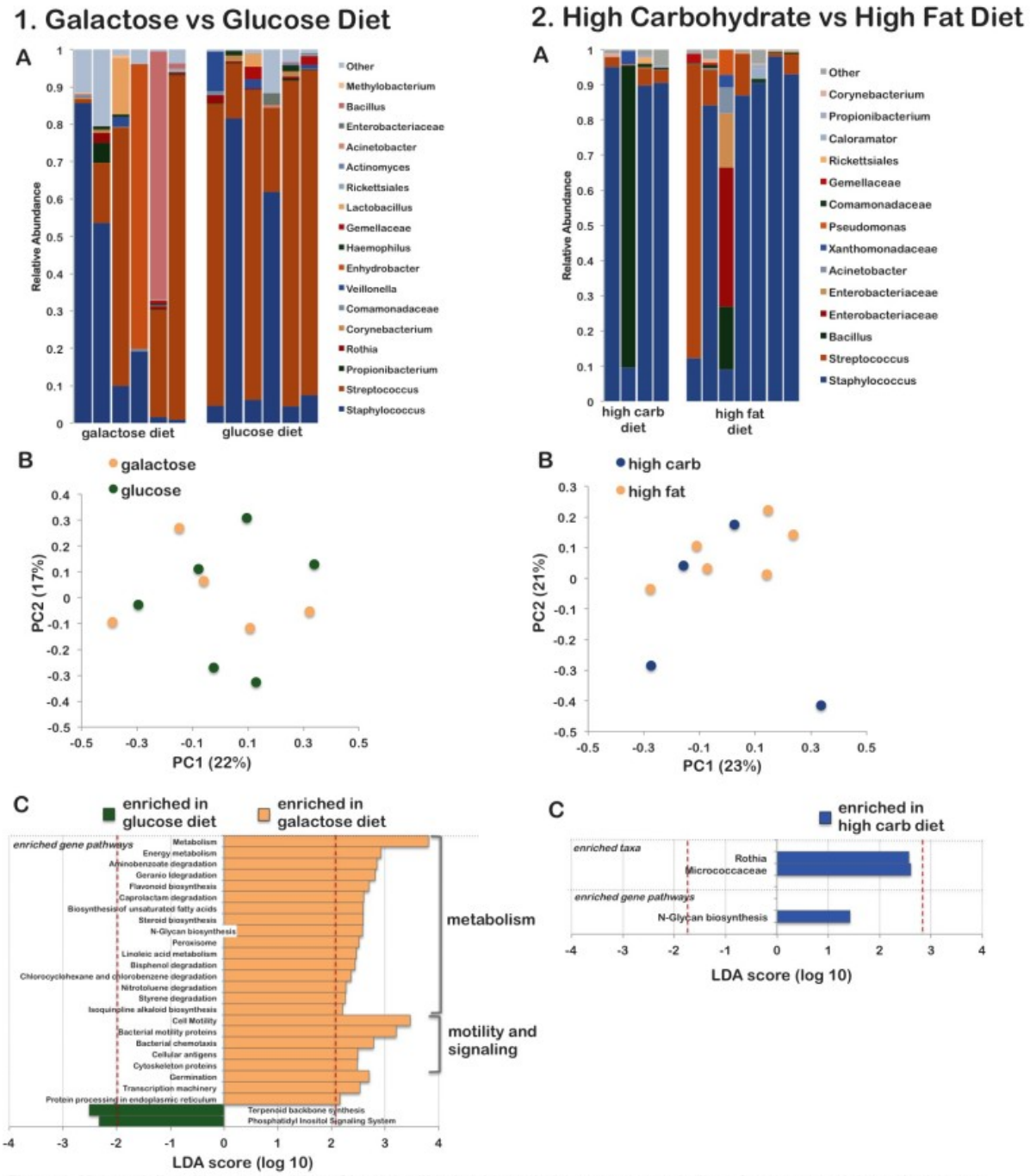

Figure 1. Maternal diet alters composition of breast milk microbiome in two cross-over studies of women receiving galactose or glucose diet (1) and high carbohydrate or high fat diet (2). Microbiome composition and Principal Component Analysis (PCoA) of beta diversity are shown in panels A and B, respectively. LEfSe analysis of bacterial gene content showed increase in the relative abundance of genes involved in metabolism, motility, and signaling after galactose consumption ($p < 0.05$, LDA > 2.0 for all features). Subtle changes in relative abundance of bacterial taxa (2A) and trend towards clustering (2B) were observed between high carbohydrate and high fat diet, with enrichment of *Micrococcacea* and *Rothia* with a high carbohydrate diet (2C). Fat and carbohydrate dietary content had subtle affect on bacterial gene content (2C).

In a study to be presented on Feb. 5 at the Society for Maternal-Fetal Medicine's annual meeting, The Pregnancy Meeting, in Atlanta, researchers will present findings from a study titled, Maternal Diet Alters the Breast Milk Microbiome and Microbial Gene Content.

Breast milk contains a diverse microbiome that is presumed to colonize the infant gastrointestinal tract and contribute to the establishment of the infant gut microbiome. The composition of the breast milk microbiome varies over time and among individuals, though the factors driving the variation are largely unknown. Since maternal diet during gestation and lactation has been previously shown to independently alter the offspring microbiome and offspring disease susceptibility, researchers speculated that the breast milk microbiome may be a mediator of this dietary impact. Two groups of lactating women participated in highly-controlled single-blinded cross-over dietary intervention studies to evaluate if maternal diet plays a significant role in structuring the taxonomic and metagenomic composition of the breast milk microbiome.

"We saw considerable differences based on maternal diet," explained Kristen Meyer, with the Baylor College of Medicine, one of the researchers of the study and the presenter at the SMFM annual meeting. "Based on this, we speculate that the maternal diet serves as a significant driver of the early infant microbiome, reinforcing the gestational dietary impact," added Meyer.

Provided by Society for Maternal-Fetal Medicine