

## PREMATURE INFANT FECAL ELASTASE QUANTITIES WITH AN EXCLUSIVE HUMAN MILK DIET: A CLOSER LOOK INTO FAT MALABSORPTION

Lindsay N Fleig<sup>1</sup>, Geoffrey A Predis<sup>2</sup>, Tripti Halder<sup>2</sup>, Heeju Yang<sup>3</sup>, Jana Unger<sup>3</sup>, Camilia R Martin<sup>4</sup>, Amy B Hair<sup>3</sup>

<sup>1</sup> Baylor College of Medicine, Department of Pediatrics, Neonatology

<sup>2</sup> Baylor College of Medicine, Pediatrics, Gastroenterology

<sup>3</sup> Baylor College of Medicine, Pediatrics, Neonatology

<sup>4</sup> Beth Israel Deaconess Medical Center, Harvard Medical School, Pediatrics, Neonatology

**Background:** The enzyme elastase is first synthesized in the fetal pancreas at 12 weeks gestation and first secretion noted at 20 weeks gestation. Elastase is essential for the breakdown of fat micelles to aid absorption of fatty acids at the intestinal mucosa. Preterm infants have limited exocrine pancreatic function during the first month of life likely contributing to growth failure; however, no studies to date have investigated the impact of an exclusive human milk diet (HUM) on fecal elastase quantities in preterm infants. We hypothesize that preterm infants fed a HUM diet will have improvement in fecal elastase quantities from initiation of feeds to attainment of full, fortified enteral feeds. This study aims to measure fecal elastase quantities longitudinally in preterm infants < 1250 grams (g) birth weight (BW) and 24-34 weeks gestational age fed a HUM diet.

**Materials/Methods:** Prospective, observational pilot study of n=22 preterm infants born between 24-34 weeks gestation with BW < 1250 g fed HUM. Fecal samples were collected during trophic feeds (early) and after obtaining full, fortified enteral feeds (late). Fecal elastase quantities were measured using Pancreatic Elastase ELISA per product protocol. Early Samples were compared to Late Samples using an unpaired 2-tailed t-test for each infant.

**Results:** Enrolled infants were 57% male (17/30) with average gestational age  $27.5 \pm 2.3$  weeks with average birth weight  $983.2 \pm 185.3$  grams and average time to full feeds was  $13.1 \pm 7.4$  days. Late samples' fecal elastase concentration were significantly higher in comparison to Early Samples ( $p=0.0055$ ).

**Conclusions:** Fecal elastase concentrations increase in preterm infants fed a HUM diet after obtaining full enteral feeds at 34 weeks PMA. Increasing fecal elastase levels are positively correlated with attainment of full enteral feeds in premature infants. Further investigations comparing growth velocities in preterm infants fed a HUM diet to stool elastase quantities may elucidate the relationship of a HUM diet and growth.