Fecal lactoferrin in newborns, infants and toddlers- Evaluation in asymptomatic children and patients with functional disorders

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Background: Fecal lactoferrin (FLA) is a reliable marker of intestinal inflammation for infectious diarrhea and inflammatory bowel disease (IBD). In IBD, levels of FLA return from elevated to normal values in parallel to therapeutic response, reflecting mucosal healing. Normal values in adults are below 7.25 μg/g feces. In adults and children with active IBD, concentrations range from 400-1200 μg/g feces. Until now, there was minimal data on FLA levels in very young children.

Aims of Study:

- Determine baseline FLA levels in healthy neonates, infants and toddlers.
- Determine LFA levels in children with intestinal functional disorders.

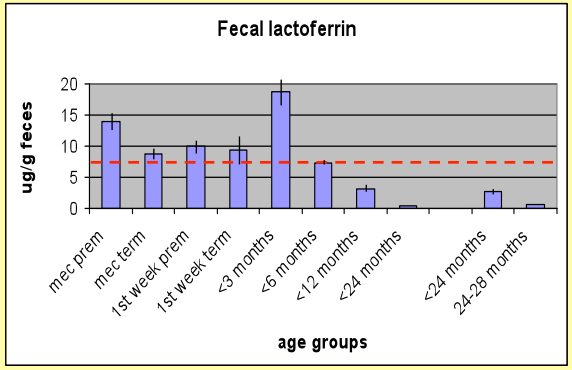
Patients I: 134 fecal samples were collected from healthy children on the neonatal ward or who were seen by their pediatrician.

Subject ID	Number of specimens	Age groups
Neonates	67	42 <38weeks gestation 46 meconium
Infants - 1	6	0 to 3 months
Infants - 2	14	> 3 to 6 months
Infants - 3	14	> 6 to 12 months
Toddlers	12	> 12 to 24 months

Patients II: 40 children (13 ≤ 24 months, 27 24-48 months) that were evaluated for GI-complaints (abdominal pain, constipation or toddler`s diarrhea) were screened for fecal LFA. Intestinal inflammation was ruled out by standard clinical methods.

Methods: FLA was determined quantitatively by ELISA (*IBD-SCAN*; TechLab, Blacksburg, VA) and results are reported as μg/g feces.

Results I :



- FLA mean level for meconium samples of neonates was 13.89±2.43.
- Termed infants showed a level of 8.81±1.91 during the first week of life, 9.9±2.32 for preterm and 9.32 ±5.01 for termed neonates.
- In all infants up to 3 months, the mean LFA levels was 18.72±4.59.

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Results II: In groups >3 months, FLA steadily decreased.

≤6 months: 7.26±0.82.
↓
≤12 months: 3.19±1.0
↓
≤24 months: 0.51 ± 0.31

Consistently in those children with abdominal complaints but without other signs of intestinal inflammation, the FLA levels ranged from 2.77±0.94 to 0.73±0.28, for <24 months and 24-48 months old, respectively.

Conclusions and Discussion:

- FLA levels are slightly elevated over baseline (i.e. 7.25μg/g feces) in meconium specimens. Feces of healthy infants and toddlers following the meconium specimen have baseline FLA levels similar to adults subjects.
- Stable baseline levels in the range of those published for adults could be demonstrated in infants as young as 6 months. In neonates and infants younger than 6 months, FLA did not exceed two times baseline. In comparison, mean fecal calprotectin is significantly elevated in children <5 years.
- Fecal lactoferrin may be useful as a marker of intestinal inflammation in subjects < 48 months.