# FECAL LACTOFERRIN:

## RELIABLE INFLAMMATORY MARKER IN PEDIATRIC IBD

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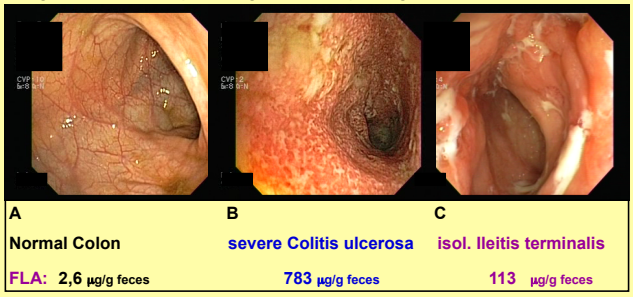
**Introduction:** Early diagnosis of IBD is crucial: Induction of remission by specific therapy aims to improve the patient's symptoms and to maintain or restore the quality of life as soon as possible. However, current clinical and laboratory parameters like CRP and sedimentation rate (ESR) are often not reliable enough. Endoscopy with biopsies and histology are informative but invasive, especially in children. The measurement of human lactoferrin, a neutrophil derived glycoprotein, in feces and whole gut lavage fluid has been shown to correlate with intestinal inflammation in both IBD and infectious gastroenteritis. Normal values in adults are below 8 µg/g feces. In adults and children with active IBD, concentrations range from 400-1200 µg/g feces.

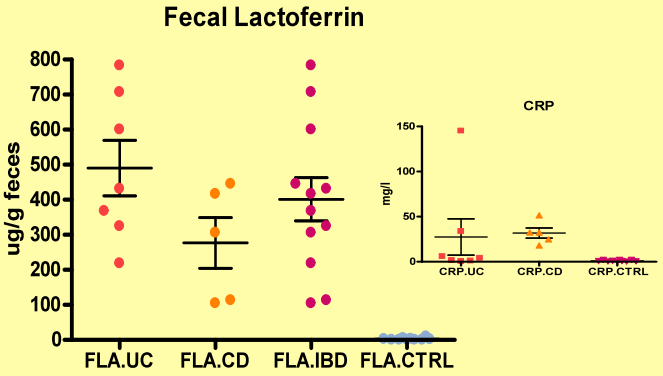
Figures A-C: Endoscopic findings with corresponding lactoferrin-levels



| A | B | C |
|---|---|---|
| Normal Colon | severe Colitis ulcerosa | isol. Ileitis terminalis |
| FLA: 2,6 µg/g feces | 783 µg/g feces | 113 µg/g feces |

**AIMS & METHODS:** To correlate fecal lactoferrin levels with CRP, endoscopic and histologic findings of pediatric patients suspected of IBD. Fecal lactoferrin (FLA) was determined in stool specimens collected prior to endoscopy during diagnostic workup for IBD. FLA was determined quantitatively by an ELISA (IBD-SCAN™; TechLab, U.S.A) and results are reported as µg/g feces (normal: <8). CRP is reported as mg/l serum (normal <5). Two patient groups were determined based on endoscopic and histologic criteria: Group A (n=12) included patients (mean age 12) who were subsequently diagnosed with IBD (UC 7, CD 5). Group B (n=10) included patients (mean age 11) in whom IBD was ruled out.

**Results:** Group A (IBD) had a mean FLA of 401.3 (SEM 61.7, range 104-783.1) in contrast to 2.1 (SEM 0.9, range 0-9.8) determined for group B (control). These results are significantly different as determined by a two-tailed T-test ($p<0.002$). The lowest levels of FLA (104 and 113) in IBD patients (group A) were measured in 2 patients with localized Crohn´s disease (ileitis terminalis and some scattered aphthous lesions, but without severe colitis). The highest level of FLA (783.1) and CRP (145.2) was observed in a boy with severe pancolitis ulcerosa. 5 out of 7 UC patients had normal CRP but all had elevated FLA. All patients of group B had normal upper endoscopy and ileocolonoscopy and normal histology. CRP was negative, too. The sensitivity, specificity and overall correlation for FLA were 100%, 90% and 96%, respectively.




**CONCLUSION:** Elevated FLA differentiated between subjects with the presence of inflammation and those having intact and normal intestinal mucosa. These results demonstrate that the determination of FLA is useful in diagnosing IBD in pediatric patients. Even in patients with normal CRP elevated levels of FLA correlated to the presence of inflammation as determined by endoscopy and histology (R=0.96). Our results show that FLA is a helpful parameter for the early diagnosis of pediatric IBD and may assist with the scheduling of invasive diagnostics like endoscopy or the evaluation of therapy.

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