

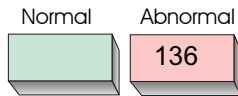


LAB#: F000000-0000-0  
PATIENT: Sample Patient  
ID: P000000000  
SEX: Female  
AGE: 33

CLIENT#: 12345  
DOCTOR: Doctor's  
Data, Inc. 3755  
Illinois Ave. St.  
Charles, IL 60174

## *Lactoferrin; stool*

Lactoferrin



Reference  
< 7.3  $\mu\text{g/mL}$

Lactoferrin is a quantitative GI specific marker of inflammation used to diagnose and differentiate IBD from IBS and to monitor patient inflammation levels during active and remission phases of inflammatory bowel disease.

Date Collected: **04/12/2013**      Comments:  
Date Received: **04/16/2013**  
Date Completed: **04/22/2013**

## INTRODUCTION

This analysis of the stool specimen provides fundamental information about the overall gastrointestinal health of the patient. When abnormal microflora or significant aberrations in intestinal health markers are detected, specific interpretive paragraphs are presented. If no significant abnormalities are found, interpretive paragraphs are not presented.

### Fecal Lactoferrin

The level of fecal lactoferrin, a biomarker of serious gastrointestinal inflammation, is abnormally high in this fecal sample. Fecal lactoferrin is elevated in association with Inflammatory Bowel Disease (IBD) such as Ulcerative Colitis (UC) or Crohn's Disease (CD)[1,2], but NOT Irritable Bowel Syndrome (IBS)[1,3]. Therefore, assessment of fecal lactoferrin levels enables distinction between IBD and non-inflammatory IBS. Such distinction is critical because, although both IBD and IBS may share some common symptoms such as diarrhea, abdominal cramping and weight loss, the diseases are treated quite differently. IBD may become life threatening, requires life long treatment and possibly surgery. In contrast, IBS is often effectively treated with dietary restrictions, stress reduction and medication.

Gastrointestinal inflammation associated with IBD is associated with increased infiltration of activated neutrophils into the mucosa and increased release of lactoferrin into the gut[1,4,5]. Patients with inflammation of the GI tract, such as IBD (but not IBS), exhibit elevated lactoferrin concentrations in the feces[1].

Clinical studies have shown that fecal lactoferrin levels of healthy persons are similar to IBS patients, but markedly increased in patients with active IBD[1,3]. Patients with IBD oscillate between active and inactive disease states, and fecal lactoferrin levels increase 2-3 weeks prior to onset of clinical symptoms[6]. During remission and effective treatment, fecal lactoferrin decreases significantly. Therefore disease activity, and efficacy of treatment can be monitored by following fecal lactoferrin levels. The test can be ordered separately to track disease activity in patients with IBD.

Moderately elevated levels of fecal lactoferrin can occur, with fecal red blood cells and leukocytes, in association with invasive enteropathogens [7,8]. Such levels would be expected to be much lower than those associated with the active phase of IBD. Therefore, with moderately elevated levels of fecal lactoferrin, one should check for the presence of enteropathogens (eg. Shigella, Campylobacter, Clostridium difficile).

Guidelines for interpreting the results of this test are provided by the results of a large multi-center clinical study which evaluated fecal lactoferrin levels in 180 patients suffering with IBS and IBD (UC and CD) compared to 56 healthy controls.

GROUP	# of SPECIMENS	FECAL LACTOFERRIN	
		mean mcg/ml	+/- SE

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Inactive UC	41	67 +/- 24
Active UC	31	815 +/- 789
Inactive CD	26	239 +/- 83
Active CD	51	672 +/- 242
IBS	31	1.3 +/- 0.3
Healthy Controls	55	1.6 +/- 0.4

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