Calprotectin

Calprotectin belongs to a group of calcium-binding neutrophil-derived proteins. Calprotectin plays a regulatory role in the inflammatory process and it is released from neutrophils during activation and cell death. Calprotectin makes up about 60% of the cytosolic protein in neutrophils. Neutrophils are mobilized and activated in the gut, in response to: cell or tissue damage; increased permeability of the mucosa; and infectious processes. Thus, calprotectin is a reliable marker for the presence of infectious, inflammatory or malignant disease. Mechanistically, calprotectin has inhibitory effects on zinc dependent enzymes producing bactericidal and fungicidal properties with MICs comparable to those of many antibiotics.

Simple, reliable, and noninvasive, calprotectin can be used as often as needed for the following clinical uses:

• To assist in selecting patients with abdominal symptoms who may require further diagnostic procedures.
• To distinguish between IBD, IBS, and gastrointestinal infection.
• To determine disease activity and risk of relapse in IBD.
• To select children for endoscopy.
• To evaluate post-infectious and inflammatory components of IBS.
• “The use of fecal calprotectin levels promises to offset morbidity by enabling early intervention treatment while disease relapse is still subclinical.”
• To evaluate IBD treatment response and to determine when mucosal healing has been achieved.

Calprotectin is the noninvasive “test of choice” for differentiating Irritable Bowel Syndrome & Inflammatory Bowel Disease.

This sensitive marker:

• Reflects the flux of leukocytes into the intestinal lumen.
• Can be conveniently assessed in small samples sent by ordinary mail.
• Distinguishes between patients with Irritable Bowel Syndrome (IBS) and Inflammatory Bowel Disease (IBD) with a 99% Positive Predictive Value in patients with positive Rome Criteria and negative calprotectin (<50 µg/g).
• Predicts relapse in patients with IBD, and serves as an objective marker to assist in deciding when to treat.
• Assists in selecting patients for endoscopy and in monitoring response to treatment, especially in children, who may require general anesthesia to undergo more invasive analyses.
• Correlates strongly with 111-indium-labeled leukocyte excretion (the “gold standard”) as well as histologic and endoscopic grading of disease activity in ulcerative colitis.
Calprotectin

Calculation: Fecal calprotectin is a direct measure of inflammation in the gut and is directly correlated to disease activity in Inflammatory Bowel Disease (IBD). As such, calprotectin has been called “the ESR (Erythrocyte Sedimentation Rate) of the gut.” Elevations can be caused by IBD, infection, polyps, neoplasia or NSAID usage. Levels greater than 150 µg/g warrant further investigation. If the patient’s result is less than the functional sensitivity (FS) of the assay, then the FS is used for calculation purposes.

The assay for Calprotectin has not been cleared by the U.S. Food and Drug Administration and is for Research Use Only. Performance characteristics of the assay have been verified by Genova Diagnostics, Inc.

Commentary is provided to the practitioner for educational purposes, and should not be interpreted as diagnostic or treatment recommendations. Diagnosis and treatment decisions are the responsibility of the practitioner.

References

8. Shamah F. Inflammatory Bowel disease: Immunodiagnostics, Immunotherapeutics and Eozotherapeutics. Gastroenterology; 2001; 120: 822-835

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For test kits, clinical support, or more information contact:
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More detailed publications with references are also available:
www.gsdol.com
Laboratory Assessments for Digestive Disease CD-ROM

How do I interpret test results?

Normal Commentary <50 µg/g
Values below 50 µg/g are not indicative of inflammation in the gastrointestinal tract.

Elevated Commentary 50-150 µg/g
Values ranging from 50 to 150 µg/g are associated with mild inflammation in the gastrointestinal tract. The inflammatory response could be due to post-infectious IBS, infection, food allergies, or the use of non-steroidal anti-inflammatory drugs (NSAIDs).

Elevated Commentary >150 µg/g
Values above 150 µg/g indicate significant inflammation in the gastrointestinal tract. Etiology has been associated with: IBD, infection, NSAID use, polyps, adenomas, or colorectal cancer. Further investigative procedures are necessary to determine the cause of inflammation.

Elevated Commentary >250 µg/g (in addition to >150 µg/g commentary)
For patients with IBD, calprotectin levels above 250µg/g indicate active disease that has been associated with mucosal inflammation. Patients with IBD in clinical remission and levels above 250 µg/g have a high risk of relapse within one year.5