Eosinophil protein X (EPX)

Why is EPX the “test-of-choice” to assess eosinophil activity in the gut?

There are a number of invasive procedures that assess eosinophilic activity in the intestinal mucosa, including histologic observation, immunochemistry markers, and gut lavage. However, all of these tests have limited utility for the office-based practitioner because they require colonoscopy or biopsy.

Eosinophil protein X (EPX) offers the practitioner a sensitive, noninvasive alternative to these invasive procedures. Clinical research indicates a significant correlation between eosinophil mediators in stool, such as EPX, and whole gut lavage fluids, the “gold standard” assessment. In addition, EPX is not prone to many of the clinical drawbacks of other noninvasive inflammatory markers.

Fecal sIgA, for example, has been shown to be a very unstable marker; its accuracy in quantitative assessments is thus highly questionable. Lactoferrin is a neutrophil-derived fecal marker of inflammation. Although it does have clinical utility, it may not be as sensitive a marker of low-level inflammation as EPX—and is certainly not as sensitive as the combination of EPX and calprotectin. In fact, by the time lactoferrin tests positive, significant disease symptoms are usually already present. For this reason, it is not as effective a monitoring tool for diseases like Inflammatory Bowel Disease (IBD). Fecal lactoferrin may also produce false-positive results in some patient groups, such as breast-fed children.

In summary, EPX offers increased sensitivity for evaluating inflammatory disease activity and for predicting relapses in patients with IBD.

What conditions are associated with high fecal EPX?

Inflammatory Bowel Disease (IBD)
Intestinal parasites (helminthiasis)
Chronic diarrhea
Food allergy or atopic dermatitis
Gastroesophageal reflux
Chronic alcoholism
Protein-sensitive enteropathy
Bowel cancer
Eosinophilic gastroenteritis (rare)

What is EPX?

Eosinophils are involved in a broad range of diseases, including those of inflammatory and neoplastic origin. There is increasing evidence that eosinophils are functionally involved in the pathophysiology of various inflammatory disorders of the gut.

Eosinophils contain a number of highly cationic proteins such as eosinophil cationic protein, major basic protein, eosinophil peroxidase, and eosinophil protein X (EPX). These cationic proteins have potent cytotoxic properties and are released from the eosinophils after being activated.

Turn-around Time 14 days

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**How do I interpret test results?**

Normal EPX levels can indicate the clinical efficacy of an elimination diet or a clinical remission of IBD. Elevations in EPX may occur in response to food allergy, protein-sensitive enteropathy, helminthic infection, IBD, allergic colitis, or gastroesophageal reflux.

**What further testing might be indicated?**

The following tests should be considered in patients with elevated EPX.

- **Food Antibody Assessment**
- **Anti-Gliadin Antibodies Assay**
- **Intestinal Permeability Assessment**
- **Parasitology Profile**
- **ImmunoGenomic™ Profile**

When making a differential diagnosis involving bowel cancer, also consider levels of calprotectin.

**References**