



## SCIENCE + INSIGHT

A clinical laboratory providing innovative, accurate specialty testing since 1972.

### Zonulin Family Protein; serum

Elevated serum levels of a zonulin family protein (ZFP) are correlated with abnormal results of the Lactulose Mannitol test; the long-accepted standard for intestinal permeability ("leaky gut"). Elevated levels of ZFP have been associated with metabolic syndrome, obesity, and several autoimmune, inflammatory and neoplastic diseases. Such diseases include Celiac disease, type I diabetes, juvenile nonalcoholic fatty liver disease, and evidence is accumulating for multiple sclerosis, rheumatoid arthritis, asthma, and inflammatory bowel disease. The test may be used as a clinically equivalent alternative for those who don't want to use the "sugar" load test.

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#### Turnaround Time

1 to 3 days

#### Analytes Tested

Click any analyte name for additional clinical information, including reference ranges, specimen collection, stability and rejection criteria.

Analyte	CPT	ABN Required
Zonulin Family Protein; serum	83520	Yes

List price applies when filing with insurance or Medicare, or when billing a patient directly.

Prompt payment pricing applies when billing to a physician account or prepayment is received with the test.

Doctor's Data offers profiles containing multiple analytes. \*Multiple analytes may be billed under a single CPT code. Many analytes can be ordered individually. Pricing may vary. Click on a specific analyte for more information or read our detailed billing and payment policies.

The CPT codes listed on our website are for informational purposes only. This information is our interpretation of CPT coding requirements and may not necessarily be correct. You are advised to consult the CPT Coding Manual published by the American Medical Association. Doctor's Data, Inc. takes no responsibility for billing errors due to your use of any CPT information from our website.

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#### This test is useful for

- Celiac disease
- Non-celiac gluten sensitivity
- Type I diabetes
- Juvenile nonalcoholic fatty liver disease
- Multiple sclerosis
- Rheumatoid arthritis
- Asthma
- Inflammatory bowel disease
- Adult glucose intolerance

#### Detailed Information

This test measures a zonulin family protein (ZFP), identified as properdin. High serum levels of ZFP (antigen) are correlated with abnormal results of the Lactulose Mannitol test; the long-accepted standard for intestinal permeability. Elevated levels of ZFP have been associated with metabolic syndrome, obesity, and several autoimmune, inflammatory and neoplastic diseases. Such diseases include Celiac disease, type I diabetes, juvenile nonalcoholic fatty

liver disease, and evidence is accumulating for multiple sclerosis, rheumatoid arthritis, asthma and inflammatory bowel disease. Elevated serum levels of ZFP and increased permeability are commonly observed in patients at risk of developing Crohn's disease and type 1 diabetes patients, prior to the onset of symptoms. ZFP levels may increase with corticosteroid use, but in one study prednisone decreased intestinal permeability in twenty Crohn's disease patients. Triggers associated with elevated levels of ZFP and breakdown of tight junction protein complexes (TJP) include gliadin fragments and the adherence of bacteria to the epithelial cell surface. Simple sugars, sodium, and food additives such as emulsifiers, microbial transglutaminase and nanoparticles also appear to disrupt epithelial barrier function. Clinical intervention to normalize intestinal permeability should first attempt to eliminate the trigger(s). Use of specific probiotics, and prebiotics such as inulin and fructo-oligosaccharides, have been shown to remediate gastrointestinal permeability. Other clinical interventions to restore the epithelial barrier may include dietary changes (increase soluble fiber), treatment of microbial dysbiosis, digestive supports and anti-inflammatory therapies. Anti-inflammatory therapies may include supplements such as quercetin, vitamin C, curcumin, gamma-linolenic acid, omega-3 fatty acids (EPA, DHA), and aloe vera. Other nutrients such as zinc, beta-carotene, pantothenic acid, and L-glutamine may provide some support for rejuvenation of the TJP. Consider a Comprehensive Stool Analysis to further investigate potential causes of increased intestinal permeability.

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