



SEX: Female

DOB: 11/18/1986

AGE: 32

CLIENT #: 38596

DOCTOR:

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Zonulin Family Protein; serum -Sample Report CMI38

	RESULT / UNIT	REFERENCE INTERVAL	RANGE		
			LOW	MOD	HIGH
Zonulin Family Protein*	17.6 ng/mL	< 45.0	█	█	█

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 nano-particles 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 fructooligosaccharides, 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.

References:

Scheffler L, Crane A, Heyne H et al. (2018) Widely used commercial ELISA does not detect precursor of haptoglobulin2, but recognizes properdin as a potential second member of the zonulin family. *Frontiers in Endocrinology* doi: 10.3389/fendo.2018.00022.

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Fasano A. (2012) Zonulin, regulation of tight junctions, and autoimmune diseases. *Annals of the New York Academy of Sciences*. Vol.1258(1):25-33.

Moreno-Navarrete JM, Sabater M, Ortega F et al. (2012) Circulating zonulin, a marker of intestinal permeability, is increased in association with obesity-associated insulin resistance. *Plos One* vol. 7:e37160

Zak-Golb A, Kocelak P, Aptekorz M et al. (2013) Gut microbiota, microinflammation, metabolic profile, and zonulin concentration in obese and normal weight subjects. *International Journal of Endocrinology* vol. 2013 doi:10.1155/2013/674106

SPECIMEN DATA

Comments:

Date Collected: 06/03/2019
 Date Received: 06/07/2019
 Date Completed: 06/12/2019
 Methodology: ELISA

*For Research Use Only. Not for use in diagnostic procedures.