Cyrex™ Laboratories

OCCLUDIN / ZONULIN

FUNCTION:

The gastrointestinal tract is lined by a protective epithelium. The tightness and stability of this barrier is regulated by a series of intercellular junctions, collectively called tight junctions.[1 3] These junctions allow a regulated entry of selected molecules. The integrity of the intestinal barrier is vital for the protection of the body against antigen invasion and for the preservation of gut microchemical homeostasis.[3] Zonulin and occludin proteins constitute the majority of the building blocks of the tight junctions.[2 6]

ANTIBODIES APPEAR:

Celiac disease[2]
Inflammatory bowel disease[3]
Type 1 diabetes [5]
Autoimmunity

KNOWN CROSS REACTIONS:

CLINICAL SIGNIFICANCE:

The detection of antibodies against occludin/zonulin indicates that normal regulation of tight junctions is compromised,[4 5 6] and that the tight junctions are breaking[1] down due to an autoimmune mechanism initiated by environmental triggers such as infections, toxic chemicals, and some dietary proteins and peptides. When occludin/zonulin antibody levels are measured in conjunction with levels for lipopolysaccharide (LPS) and actomyosin, the resulting information can provide a more accurate diagnosis. The detection of positive occludin/zonulin antibody levels alone indicates a paracellular breakdown of the intestinal barrier that is triggered by factors other than bacterial antigen infiltration.[4] The presence of antibodies against both occludin/zonulin and LPS indicates that the integrity of the intestinal barrier has been breached by bacterial antigens through the paracellular pathway and elevated antibody levels for occludin/zonulin, LPS, and actomyosin. This indicates that there has been penetration through both the transcellular and paracellular pathways. In many autoimmune diseases, including Celiac disease and type 1 diabetes,[5] the onset of the disease is usually preceded by occludin/zonulin upregulation. Genetically susceptible patients who test positive for occludin/zonulin should be further assessed, monitored, and set on a preventive program for type 1 diabetes and other autoimmune disorders.

References:

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3. Gassler N, et al. Inflammatory bowel disease is associated with changes of enterocytic junctions. Am J Physiol Gastrointest Liver Physiol, 2001; 281:G216-G228.
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5. Sapone A, et al. Zonulin upregulation is associated with increased gut permeability in subjects with type 1 diabetes and their relatives. Diabetes, 2006; 55:1443-1449.
6. Wong V and Gumbiner BM. A synthetic peptide corresponding to the extracellular domain of occluding pertubs the tight junction permeability barrier. J Cell Biol, 1997; 136(2):399-409.

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