



ACTOMYOSIN NETWORK

FUNCTION:

Gastrointestinal microfilaments of the actomyosin network are critical for apical junctional complex biogenesis and function.¹ The apical junctional complex, made up in part by tight junction proteins zonulin and occludin, is responsible for preventing antigen invasion and preservation of the biochemical homeostasis within the gastrointestinal tract.³ The actomyosin network can signal tight junction contractions and give structure to their assembly.

ANTIBODIES APPEAR:

Autoimmune liver disorders²
 Celiac disease^{1,4}
 Chronic hepatitis²
 Crohn's disease⁴
 Myasthenia Gravis⁵

KNOWN CROSS REACTIONS:

CLINICAL SIGNIFICANCE:

Many environmental factors such as bacterial toxins can affect the stability of the actomyosin network and occludin/zonulin. Antibodies to the actomyosin network are therefore biomarkers of intestinal barrier dysfunction, either via bacterial infiltration or by an autoimmune mechanism aimed at the gastrointestinal tract. For the best clinical value, antibodies against the actomyosin network should be measured in conjunction with lipopolysaccharide (LPS) and occludin/zonulin proteins. When antibodies are detected against the actomyosin alone, it is an indication of autoimmunity against the mucosal epithelium and other tissue cell cytoskeleton of the intestinal barrier. When antibodies are detected against the actomyosin network and LPS, but none are detected for occludin/zonulin, this indicates a breakdown in intestinal barrier integrity by bacterial antigens through the transcellular pathway. The detection of antibodies against actomyosin, LPS, and occludin/zonulin indicates that there has been both transcellular and paracellular penetration of the intestinal barrier.

References:

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4. Magalhaes AFN, et al. Studies on the nature and significance of connective tissue antibodies in adult coeliac disease and Crohn's disease. *Gut*, 1974; 15:284-288.
5. Romi F, et al. Striational antibodies in Myasthenia Gravis: reactivity and possible clinical significance. *Arch Neurol*, 2005; 62:442-446.