INTESTINAL PERMEABILITY

Changes in intestinal permeability are associated with many health conditions, including autism, autoimmune disorders, food sensitivities and inflammatory bowel disease. This 'leaky gut' causes disease because the perturbed intestinal barrier allows toxic molecules to enter the bloodstream and poison the body. Intestinal permeability can be measured using the lactulose/mannitol test. Practitioners should consider using this useful test for the assessment of intestinal permeability and malabsorption, as it not only assists in diagnosing these conditions but can be used for monitoring the effectiveness of treatment therapies.

Leaky Gut

The gastrointestinal tract has two main functions; a) to digest and absorb important nutrients for the body's growth and function, and b) to act as a barrier to keep harmful solutes, luminal antigens and microorganisms from entering the blood. When the integrity of this complex system is disturbed and intestinal permeability exists, ill-health can easily develop. Many conditions such as autoimmune disorders, autism, food sensitivities, inflammatory bowel disease and jaundice are associated with increased intestinal permeability, which is also known as 'leaky gut'.

SYMPTOMS AND CONDITIONS ASSOCIATED WITH INTESTINAL PERMEABILITY	
Abdominal recurrent pain	Food allergy & sensitivity
Acute brain injury	Growth-faltering infants
Acute pancreatitis	Inflammatory bowel disease
Aging	Inflammatory joint disease
Alcoholism	Irritable bowel syndrome
Ankylosing spondylitis	Malabsorption
Atopic dermatitis	Obstructive jaundice
Autism	Parasitic infection
Burn victims	Preterm infants
Chemotherapy treatment	Rheumatoid arthritis
Chronic heart failure	Schizophrenia
Cirrhosis	Trauma patients
Coeliac disease	Type I diabetes

Tests to Assess Leaky Gut

The intestinal permeability test which assesses lactulose and mannitol recovery has been used to study numerous disorders which are associated with increased intestinal permeability including Crohn's disease, abdominal recurrent pain, acute pancreatitis, chronic heart failure, traumatic brain injury, burn patients, cirrhosis, type I diabetes and obstructive jaundice.

The lactulose/mannitol test can also be used to monitor improvements or deterioration in intestinal permeability as a result of therapy, disease or drug use. It has been used to monitor the compliance and effectiveness of a gluten-free diet in patients with coeliac disease. After one year of following the dietary plan, patients that were negative for the anti-gliadin antibody test (which shows dietary compliance), had lowered intestinal permeability.

Understanding the Lactulose/Mannitol Intestinal Permeability Test

The lactulose/mannitol test works on the principle that small molecules (i.e. mannitol) are readily absorbed by the intestinal villi, whilst larger molecules such as disaccharides (i.e. Lactulose) are not. These water soluble non-metabolised sugar molecules after penetrating the intestinal tract are excreted into the urine. Under normal circumstances the ratio of lactulose to mannitol in urine is low (i.e. lactulose is not absorbed), mannitol is absorbed. When the structure of the intestinal epithelium is jeopardised ('leaky gut' is present), the large sugar molecule can permeate the mucosa and is recovered in the urine. In this situation the level of lactulose is increased in the urine and therefore the ratio of lactulose to mannitol is high. In addition to assessing leaky gut, this test can also help diagnose malabsorption. If a low level of mannitol which normally penetrates the intestinal epithelium is observed, it may indicate malabsorption of small molecules and possible atrophy of the intestinal villi. Practitioners should consider using this useful test for the assessment of intestinal permeability and malabsorption, as it not only assists in diagnosing these conditions but can be used for monitoring the effectiveness of treatment therapies.

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