

## The Small Intestine: Absorbing the Building Blocks of Life

The next stop in our journey through the digestive tract is the small intestine. The small intestine is the unsung hero of health in the digestive tract, the site at which most of the major nutrients we need to maintain, build and repair our cells are absorbed into the blood.

The lining of the small intestine is highly specialized for absorption. It is extensively folded and lined with fingerlike projections called villi. These villi are also covered with smaller projections called microvilli. This brilliant design creates a larger surface area than would a flat lining. It allows for more areas of contact with the intestinal cells and the chyme or food smoothie passing through.

The small intestine is about 15-20 feet in length. It is divided into 3 sections: the duodenum, the jejunum and the ileum.

The duodenum is the first part of the small intestine. The liquid food that comes out of the stomach is loaded with acid from the stomach and so the nutrients that need acid to be absorbed such as iron, zinc, magnesium, calcium, and B vitamins are absorbed here. The gallbladder releases bile and the pancreas secretes enzymes and bicarbonate into the duodenum. Fats and fat-soluble vitamins are also absorbed in the duodenum.

The second section, the jejunum, absorbs water-soluble vitamins, sugars and amino acids. The last section, the ileum, is the place where cholesterol, vitamin B12 and bile salts are absorbed.

Dysfunction in the small intestine affects the entire body. Faulty absorption can affect everything from brain function to skin health. Poor absorption is often due to chronic infection or inflammation that causes swelling and distortion of the intestinal cells and compromises their ability to absorb nutrients.

One common and often undiagnosed condition in the small intestine is leaky gut syndrome. This is a condition in which inflammation causes swelling and gapping between the intestinal cells. This opens up spaces between the cells that would normally be tightly closed. This allows substances into the blood and tissues that are not supposed to be there. These foreign substances trigger the immune system and the inflammatory process begins. Left un-treated chronic inflammation causes destruction of the intestinal cells, autoimmunity and immune deficiency.

Factors that cause leaky gut are toxic chemicals, food allergies, infection, chronic stress, dietary irritants such as refined sugar, caffeine and alcohol, and repeated use of antibiotics and pain medications.

There is a long list of disease states that are associated with leaky gut syndrome. Some of these are allergies, arthritis, auto-immune diseases, ADD and autism, eczema, multiple chemical sensitivity, IBS, hives, psoriasis and chronic fatigue syndrome.

There are several ways to heal your small intestine. Refined, highly processed foods cause chronic inflammation in the intestine. Adopt a diet high in fiber and whole, nutrient dense foods. Food sensitivity testing is a good way to identify specific foods that are irritating your gut. Healing chronic infection in the gut is also very important. Probiotics, glutamine and aloe vera gel can heal gut tissue once you have removed the cause of inflammation.

So be good to your small intestine! Take care of it and you will set the foundation for good health in your whole system. Good health starts at digestion!

*From the bitterness of disease man learns the sweetness of health. ~Catalan Proverb*