

“ENTERIC NERVOUS SYSTEM & DRY EYES”

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The enteric nervous system (ENS) or the intrinsic nervous system is a part of the autonomic nervous system (ANS). It consists of a mesh-like system of neurons in the gut wall that governs the proper functioning of the gastrointestinal tract. It is called **the Second Brain** as it is capable of acting independently of our brain and the sympathetic and parasympathetic nervous systems (which are the main divisions of the autonomic nervous system), although it may be influenced by them.

Structure:

It is derived from the neural crest cells and consists of some 500 million neurones, embedded in the lining of the gastrointestinal system, starting from the esophagus and extending down to the anus.

These neurons are collected into two types of ganglia: the submucosal (Meissner's) plexuses, lying in the gut submucosa, and the Myenteric (Auerbach's) plexuses, located between the inner and outer layers of the muscularis externa. They secrete about 30 neurotransmitters, identical to the ones found in CNS, such as acetylcholine, dopamine, and serotonin. **More than 90% of the body's serotonin and 50% of the body's dopamine is produced in the gut.**

These plexuses can operate independently as well as communicate with the central nervous system (CNS) through the parasympathetic (via the vagus nerve) and sympathetic (via the prevertebral ganglia) nervous systems.

The umbilicus is used to visually separate the abdomen into quadrants. The umbilical cord, which contains the umbilical arteries and vein to carry nutrients, oxygen and waste products to-and from the liver in a baby prior to birth, shuts down after birth. However, the umbilical vein does not undergo thrombosis or fibrosis in the postnatal period, and an adult umbilical vein can be cannulated, and through it, a direct access to the portal venous system can be obtained.

Functions

The ENS is capable of autonomic functions, like the coordination of reflexes. However, it can operate independently of the brain and the spinal cord.

The sensory neurons of the Meissner's plexus report on the mechanical and chemical conditions within the gut mucosa (composition of food in the gut, gut secretions). They send impulses to the motor neurons of the myenteric plexus which either stimulate or relax the intestinal muscles, thus controlling the peristalsis and churning of intestinal contents. Other neurons control the secretion of enzymes.

When it comes to our moods, decisions and behaviour, the brain is not the only one doing the thinking, although we are not conscious of our gut "thinking". The gut sends a lot of information to the brain through the released Serotonin and Dopamine, and that affects our well-being, and doesn't even come to our consciousness (or we being aware of it). The ENS helps us sense environmental threats, and that influences our gut responses (urinating or defecating in response to stress, fear).

Since the connection of navel with the liver is still maintained with the umbilical vein after birth, by stimulating the navel, the ENS is stimulated and that increases the peristalsis and pumping of nutrients, toxins, waste, as well as the lymphatic and blood flow in the abdomen, and helps the proper functioning of these systems.

Applying hot oils into the navel and performing gentle massage warms your abdomen, which stimulates ENS and enhances the immune function.

By producing over ninety percent of the serotonin, and about fifty percent of the dopamine, keeps us satisfied and happy. They help in depression, Alzheimer's and ADHD, due to a close link between the brain and the ENS. A healthy gut is important for a happy mood and a healthy life!!!.