Beyond the Stomach with ENS: Exploring the Broader Impact of Eating

Your digestive system is basically a 25-foot-long conveyor belt.

The control for this conveyor is the **Enteric Nervous System (ENS)**.

It is located within the digestive tract itself. Without ENS, you would have to (for example) think and concentrate on a host of routine actions such as swallowing.

It's part of the body's overall control system **(ANS)** that can act semi-independently of the brain, for example: heartbeat.

The speed of the digestive conveyor belt from start to finish could be up to 3 days. Its speed is also variable on factors such as sleep, water content, etc.

This semi-independent control system is also running to a time schedule that's not necessarily closely tied to other body clocks.

Another commonly written about body clock is circadian rhythm (the master clock). The word circadian implies a 24-hour circular clock. People (or at least their brain) tend to follow this clock.

The circadian rhythm clock is also influenced by social cues such as being in a restaurant or bar, the meal time, i.e. the clock on the wall! Also, before electric lighting, the time of dawn and dusk were also big factors.

The circadian rhythm clock also tends to make people much more liable to be hungrier in an evening compared to morning, especially if you sleep well.

In other words, you can have a mismatch of these body clocks when changing your diet routine.

ENS uses both nerve signals and a range of messenger hormones via your bloodstream to signal the brain to eat. Using hormones as a method of communication means every organ and cell in your body is updated with the information. It also has reserves of the "reward" hormone dopamine to signal its "approval".

Some messages can, however, take minutes and even hours to transmit. An example: One important hormone the control systems trigger is Insulin. This is released into the bloodstream; its message is listened to by specific specialised storage cells. These are located throughout the body but mainly around the waist.

Insulin's message is; "If you notice a lot of sugar in the bloodstream, then collect it, turn it into fat then store it.

Be careful not to jump to conclusions about sugar as being the "Big Bad Wolf" of losing weight. ALL carbs (even starchy flour) are turned into sugars by enzymes in the intestine.

When you resolve to go on a weight loss diet, the ENS will know nothing about this diet and will continue to run the conveyor belt at its previous speed. After a few hours into your diet, ENS will start to send messages to your brain to say, "I was expecting a 1500cal dinner; where is it ?"

ENS will have already started to increase the levels of enzymes in the digestive tract to prepare for this dinner. It will have also moved your previous meals further down the conveyor belt to make room. This is the bad news of this explanation; for the first few days, you will have to live with ENS nagging your brain with message hormones until ENS itself adjusts the speed of the conveyor belt to fit the new reality of the current food intake.

Indigestion prior to when a meal is expected is a giveaway that the two control systems (Brain & ENS) are not yet synchronised together. This stomach acid is needed in the same way as enzymes are used (particularly Protein).

Similarly, having a meal that is outside of your usual eating pattern can also pose problems for ENS. So that special birthday dinner at a restaurant could also cause indigestion as ENS overestimates the amount of stomach acid needed.

Remember that hunger is the body's way of signalling to seek out food (mainly from the ENS), and if readily available, it will use this rather than use body reserves. This is one of the main differences from life today and a couple of hundred years ago.

The not-so-bad news: Bear in mind your body keeps another reserve of energy besides fat called **Glycogen**. This is a sort of sugary liquid held in your liver and muscles for emergencies. Using this energy reserve is why Marathon runners don't need to stop at McDonald's halfway through their 26-mile run.

In summary, ENS can be thought of in the same way as a loyal dog, which generally will follow you without question but needs to be kept on a tight lead, or they might run off!

A herbivore tree eating Dinosaur.

Its brain is the size of a Walnut. ENS controls most of the rest!

Richard Marsden CAL100.COM