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What Happens To The Food You Eat?

by Dr. Harold Gunatillake - Health writer



We all like a

pleasant display of a variety of foods on our dining tables cooked by a MasterChef or akin and have the pleasure of eating such tucker with a glass of wine to compliment. Most Sri Lankan housewives become spontaneous Master Chefs cooking a variety of cuisines for their families daily.

But what happens to such superfoods when consumed?

In the mouth the food mixes with the alkaline saliva secreted by the salivary glands, in preparation for further digestion in the stomach containing acid juice in waiting to be neutralised. This is one reason that you should not skip breakfast, as the night secretion of acid juice in your stomach needs to be neutralised. Un-neutralised acid juice can cause gastric problem, such as gastritis, ulcers and so on. Eating your breakfast prevents such disorders. No wonder according to Chinese tradition they eat more frequently short meals. Your molar teeth help you to breakdown the food into tiny particles referred as chewing. This chewed food is referred to as the 'bolus. Chewing with your mouth closed is good etiquette as you grow up.

The bolus of food enters the oesophagus. That is a tube 10 inches long that connects the back of the throat to the stomach. Food is squeezed through this tube and may give the appearance of a snake swallowing a frog and a similar movement occurs in your gullet (oesophagus). This movement occurring in the gut is referred to as 'peristalsis', visible to radiologists on barium swallow screening. In the stomach the food and the liquids gets mixed with the gastric juice. Stomach churns and makes the contents into something akin to a fruit salad. This fruit salad like mixture is referred to as 'chyme'. The acid secreted in the lining glands of the stomach is hydrochloric acid (HCL) and the pH (alkalinity -acidity measurement) can drop to 1 or 2. This juice enables the body to breakdown proteins, activate important enzymes and hormones, and form a barrier against bacterial overgrowth in the gut.Hydrochloric acid in the stomach assists in the digestion and absorption of carbohydrates, fats, and vitamins A and E by stimulating the release of pancreatic enzymes and bile for further breakdown in the small intestine.

As you get older the secretion of acid juice diminishes. We refer to this condition as 'Hypochlorohydria'

Hypochlorohydria can lead to indigestion, bloating, flatulence, diarrhoea and diseases like asthma, anaemia, cancer and so on.

Contaminated foods

This natural process may be disturbed if one eats contaminated foods. The commonest germ that affects the stomach is the 'Norovirus', causing swelling of the stomach lining. This can lead to further symptoms like pain, nausea, diarrhoea and vomiting. Foods like oysters and fruits can be contaminated with this virus, and sometimes may come from a cook when eating restaurant food. Salmonella, listeria and E. coli are other germs that can cause food poisoning in the stomach. Cooked rice when kept in the fridge for many days can get contaminated with listeria germ. Beware of ice cream easily contaminated with listeria, and over 3,000 people die in US. yearly.

The brain starts activating just from the visual display and the smell of food. The brain stimulates the endocrine cells in the stomach lining through the vagus nerve, to secrete a hormone called gastrin. Gastrin seems to activate the secretion of gastric juice to produce pepsinogen which further breaks down into pepsin with the help of the acid.

Without adequate gastric secretions, incompletely digested macromolecules can be absorbed into the systemic circulation through the small bowels to cause more problems.

Carbohydrates are not digested in the stomach but the proteins do break down by the pepsin to form peptides which can be absorbed in the small intestines.

The glands in the stomach lining also secretes an enzyme called protease which is vital for further breakdown of proteins into amino acids for absorption in the small gut.

At the angle of the lower oesophagus and the stomach there isvalvular action due to smooth muscles located at the junction of the oesophagus and the stomach called sphincter muscles. Valvular activity at this sphincter prevents food and acid regurgitating or refluxing into the lower oesophagus. The oesophageal tube does not like gastric acid, and its presence causes inflammation (oesophagitis), and may cause ulcerations and strictures.

Clinically, you experience the symptoms of heart burn when acid refluxes into the oesophagus in situations where the sphincter is incompetent.

Some believe that you could shrink the stomach through exercise. No exercise can change the size of your stomach. When the stomach is empty it does contract to the size of your fist, and expands according to the bulk of food you eat.

Planks, setups, and crunches tone the abdominal wall muscles between the xiphoid bone in the chest wall and the pelvis bone, while the stomach just floats within.

The churned up partially digested food now enters the first part of the small gut called the 'duodenum' which almost encircles the head of the pancreas. The duodenum and the pancreas by their glandular secretions continue to further breakdown the proteins into amino acids. The amino acids enters the blood stream, reassembles into protein complexes in the liver required for cell functions.

Small gut and digestion

Small gut is about 17 feet long and is a very important organ in the body. Sometimes, it is referred as the 'second brain' as there are wires between the gut and the brain. It is called small intestines because the diameter is less than the large bowel. The segments of the small bowel are further divided into- the duodenum, jejunum and ileum. The food after being digested by the enzymesgets absorbed into the blood stream through the inner lining of the small gut. All digested carbohydrates are broken down into sugar, amino-acids are breakdown products of proteins, and fatty acids are from fats: are absorbed including vitamins, minerals, electrolytes and water through the small intestines. The terminal segment ileum absorbs vitamin B12, other soluble vitamins, bile salts, and nutrients that were not absorbed in the upper part of the gut. There are lymph vessels in the gut wall and fatty acids and glycerol are absorbed by the lacteals into the lymph system. This mechanism is important as the water soluble nutrients and the fat soluble fatty acids don't get mixed up in the venous portal blood stream.

Nutrition and depression

Depressions is a big problem in most developed countries, and as problematic as cancer and heart disease. According to the Institute of Functional Medicine in US. -depression is estimated to be the second leading cause of disability worldwide by 2020.

Depression and gastrointestinal disturbances go hand in hand. This is clearly seen in patients having chronic inflammatory diseases of the gut do suffer from depression, too. There seems to be a wire connection between the gut and the brain, and the microbes in the gut do participate in the process.

Our gut and our brain are both in constant communication, as mentioned earlier, through the longest nerve in the body-'Vagus Nerve'. Any injury to the brain can cause gastrointestinal distress.

Depression is linked to obesity. Our fat cells release a number of inflammatory and antiinflammatory factors. One such factor is the inflammatory cytokines that play a role in insulin resistance and increased risk of diabetes and cardiovascular disease. They also cause inflammation of the brain when they pass through the gut-brain barrier. So gut plays an imported part in most inflammatory conditions of the body including the brain. Food intolerance can lead to systemic inflammation. Dairy products, legumes and grains tend to be the most inflammatory out of all the foods in our diet. Most people may not contain the enzymes capable of breaking down the proline proteins in grains, especially gluten and gliadin. When undigested particles cross through our intestine into our blood stream our body treats it like a foreign invader and sends an immune response. This response causes inflammatory processes are linked with the disease. (Some reference to Nutrition and depression article by Squatchy)

Bloating of the stomach

Foods contain soluble and insoluble fibres. Peas, beans, oats and fruits contain soluble fibre. Germs in your large bowel break down such fibre and produce methane gas, resulting in bloating with other gastro-intestinal symptoms. Insoluble fibre is found in unprocessed foods like wheat bran and some vegetables. They are passed unchanged with little gas formation in the large bowel. Breaking down of soluble fibre is mostly done by friendly microbes assisting in the normal digestive process.

Coffee linked to bowel movements

You notice after you enjoy your warm cup of coffee you tend to visit the toilet immediately after. The reason being the coffee contains a compound that can cause to make extra gastric juice. This can cause food in the stomach to be dumped quicker into the small bowels giving the rush feeling. Coffee seems to increase digestive hormones in the gut which helps to move the digestive process faster.