

All About Digestion!

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Good Digestion - North to South

1. Brain

- Sight/smell of food triggers saliva
- Must be in a calm (parasympathetic) state

2. Mouth

- Physical/chemical breakdown begins (salivary amylase)

3. Stomach

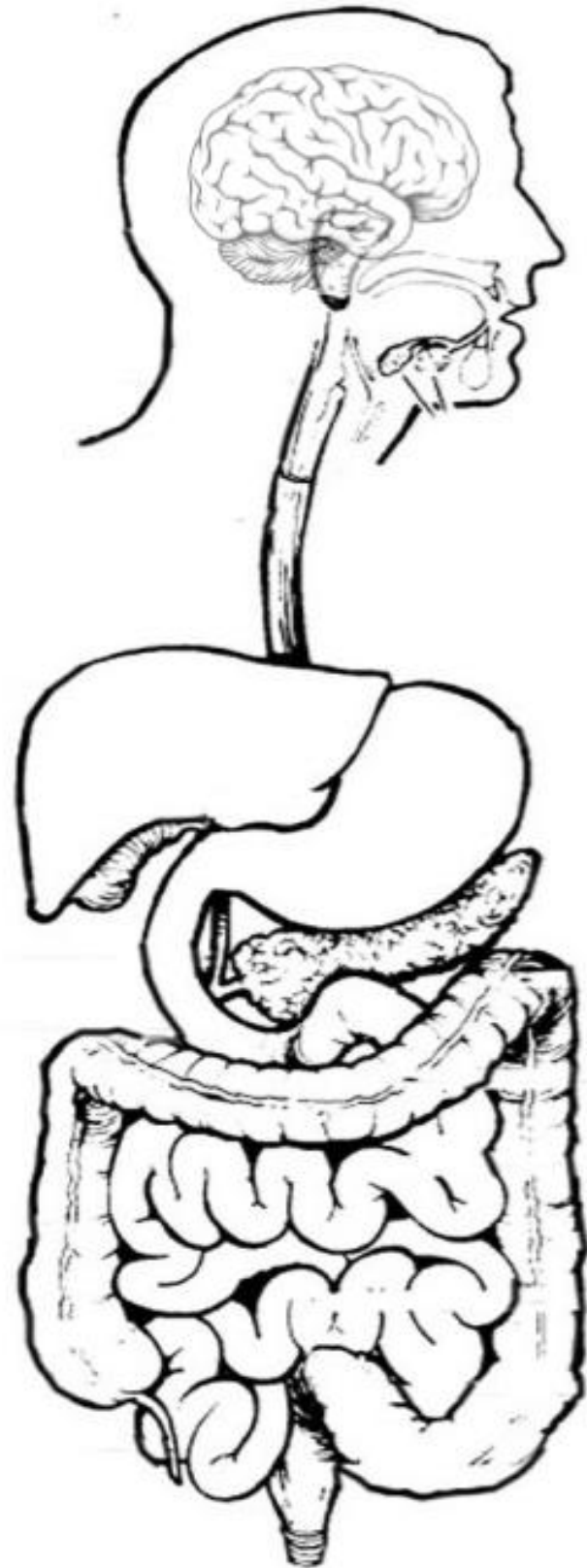
- Bolus (food clump) -> cardiac sphincter
- Hydrochloric acid creates very acidic environment in stomach (pH of 1.5-3.0) to help breakdown of proteins
- Acid also disinfects stomach, acting as a barrier to kill parasites/bacteria

4. Small Intestine

- Duodenum
 - Mucous - protects tissue from acidic chyme (slurry of food)
 - Pancreas releases sodium bicarbonate (to neutralize chyme) & enzymes to further break down carbs/fats/proteins
 - Gallbladder releases bile (emulsifies fats for absorption)
- Chyme exits duodenum almost fully digested
 - Carbs -> glucose
 - Proteins -> amino acids/polypeptides
 - Fats -> fatty acids/glycerol molecules
- Most absorption occurs in jejunum/ileum lower in the s. intestines by millions of villi
 - Glucose, amino acids, short-chain fatty acids carried by villi to capillaries and into liver
 - Long-chain fatty acids require bile and end up in lymphatic system

5. Large Intestine

- Leftover chyme (indigestible fibers, bile, water, sloughed-off cells)
- L. intestine recycles water/waste products
- Beneficial bacteria in the colon help to capture lost nutrients and creates vitamins K, B1, B2, B12, and butyric acid
- Forms and expels feces



Bad Digestion

1. Stressed Brain

- If in sympathetic state, proper digestive juices do not get released

2. Not Enough Chewing in the Mouth

- Insufficient chewing does not trigger enough saliva production - breakdown of carbohydrates insufficient and undigested starch reaches the colon and feeds candida yeast/harmful bacteria
- Also stresses stomach that has to deal with larger pieces of food - churns harder

3. Low Stomach Acid

- Stress, allergies, excess carbohydrate consumption, nutrient deficiency (zinc), and excess alcohol consumption can inhibit HCL production
- Low acid leaves one vulnerable to bacteria, yeast, prions, parasites, viruses, and other pathogens
- GERD! Foods remain in stomach too long - fats rancidify, proteins putrefy, and carbs ferment causing gas and reflux into esophagus through cardiac sphincter (antacids seem to resolve symptoms because they raise the pH of the chyme so that it does not burn esophagus - but the chyme is too alkaline and disrupts digestion down the line)

4. Small Intestine - Malabsorption, Leaky Gut

- Duodenal ulcers from chyme being too high pH - chyme is acidic enough to damage duodenum but not acidic enough to trigger pancreas to release neutralizing sodium bicarbonate
- If chyme is not neutralized by sodium bicarbonate, the pH is too low to allow enzymes to function and you cannot digest the food!
- Low fat diets do not stimulate release of bile, it gets old/viscous and can cause gallstones (bad fat diets cause bile to become viscous as well) - poor quality bile leads to no absorption of fats and lets undigested fats roam in system which overwhelms liver
- Undigested proteins (from low stomach acid) damage villi and cause leaky gut syndrome, which leads to allergies and other immune problems

5. Large Intestine - Dysbiosis

- Improperly digested debris can clog or jam open the ileocecal valve
- Maldigested food full of parasites, microorganisms, and undigested fats can disrupt normal bacteria in large intestine and interfere with production of butyric acid (colon cells' main nutrient)
- If colon cells are not nourished, leads to IBS, Crohn's, Colitis, Celiac

Strategies to Improve Digestion

- Dysfunction north leads to dysfunction south, so we work from top down
- Be calm when eating, appreciate the food that will nourish you and provide you with energy and health
- Chew food thoroughly: "Drink your solids and eat your liquids." - this will reduce burden on stomach to physically break down food and on small intestine/pancreas to chemically break down food
- Promote proper (low) stomach pH: eat quality diet not too high in carbs, get enough water/zinc/vitamin C, reduce excessive alcohol consumption, reduce stress, eliminate allergens, try bitters, apple cider vinegar, lemon juice in water, HCL supplements
- Create good bile and bile flow - eat good fats (see Guidelines for Proper Nutrition) and beets, which contain nutrients that will thin bile and promote flow
- Promote healthy intestinal bacteria by avoiding a high sugar diet and eating fermented and/or probiotic foods: yogurt, sauerkraut, kimchi, kombucha, kefir, etc.