*Human Biology ATAR – Task 4: Science Inquiry*

Mouth and Oesophagus:

“The initial digestion of steak, and all food, begins in your mouth. The act of chewing reduces steak into smaller pieces, which exposes more surface area to the various digestive enzymes that are in saliva and the stomach. Alpha-amylase is the most predominant enzyme in saliva and starts the digestion of starchy carbohydrates. However, another digestive enzyme called lingual lipase is released from glands in the mouth when you chew, which initiates the digestion of saturated fat within the steak. From the mouth, chewed steak travels down the esophagus and enters the stomach” (Dubois, 2022).

Stomach:

“Once in the stomach, metabolism of protein begins. The main stomach enzyme is pepsinogen, which is quickly converted into pepsin by the acidic stomach juices. Pepsin starts to reduce the protein in steak into smaller building blocks called amino acids and peptide fragments. However, if your stomach isn’t acidic enough -- at least a pH rating of 4 or lower is needed -- less pepsin is converted and protein digestion is significantly reduced. Your stomach juices also contain some gastric lipase, which continues to metabolize the saturated fat in the steak. Steak spends much more time in the stomach, a total of about four hours, compared to grains, fruit or vegetables, which usually spend less than an hour or so” (Dubois, 2022).

Small Intestine (breakdown & absorption):

“When the partially digested steak enters the small intestine, your gallbladder releases bile to further break down fat, and your pancreas releases proteases to further reduce the amino acid chains. Further on down the small intestine, the amino acids, fatty acids, cholesterol, vitamins and minerals from the steak are absorbed. Many of the nutrients travel to your liver first and then out to the rest of your body via the bloodstream. The material left over, which is mainly fibre and indigestible gristle, passes into the colon, losses more fluid and then passes out of the body as feces. The total time it takes for a steak to be digested and passed is between 24 and 72 hours, depending mainly on your metabolic rate and intestinal motility” (Dubois, 2022).

Material Breakdown and Use:

“Amino acids are typically used as building blocks, but if you don’t eat enough carbohydrates or fats, then your body can use amino acids for energy. Your body will metabolize protein from your muscles and other tissues back into amino acids and then convert them into glucose for use as energy in extreme situations, but only if all your fat reserves are depleted” (Dubois, 2022).

Large intestine:

“The material left over from the digestion and absorption of protein-rich food is mainly fibre and perhaps some gristle, which flows through the large intestine toward the bowel. Insoluble fibre attracts water and bulks up the stool, which tends to clean the inside of the large intestine and stimulate bowel movements. The time needed for complete protein digestion ranges between one and three days, depending on your metabolism, intestinal motility, hydration and activity level” (Dubois, 2022).

Elimination and Faeces:

“The food molecules that cannot be digested or absorbed need to be eliminated from the body. The removal of indigestible wastes through the anus, in the form of feces, is defecation or elimination” (Introduction to the Digestive System, n.d.).

References:

* Dubois, S. (2022, April 19). What Happens in the Digestion of Steak? Woman - The Nest. Retrieved May 9, 2022, from <https://woman.thenest.com/happens-digestion-steak-3014.html>
* Introduction to the Digestive System. (n.d.). National Cancer Institute. Retrieved May 10, 2022, from <https://training.seer.cancer.gov/anatomy/digestive/>