OKENABIRHIE OGHENEMERU NITA

BIOMEDICAL ENGINEERING

18/ENG08/015

ANA 226 ASSIGNMENT

**FRIED CHICKEN** (protein)

Since chicken is a protein, its digestion will go as follows;

**Stomach: Protein Denaturation**

After chewing, you swallow your food and send it to your highly acidic stomach. The acid in your stomach denatures, or unravels, the protein matrix making it more accessible for digestion. Then, your stomach releases a special enzyme called pepsin to start breaking apart the protein string into smaller strings referred to as di- and tri-peptides, as well as amino acids for easier digestion when it reaches your small intestine.

In addition to a digestive role, these changes have a protective role. For example, many of the resultant compounds bolster the immune system.

**Small Intestine: Further Breakdown and Absorption**

Your small intestine is responsible for two stages of protein digestion, including continued breakdown of the protein and absorption. As the protein travels down your small intestine, protein-specific enzymes from your pancreas continue to degrade the larger protein strings into di- and tri-peptides, as well as amino acids. Then, the wall of your small intestine absorbs these nutrients and sends them to your bloodstream for transport to the various tissues of your body. The protein from your small intestine is used to restore and repair tissue, make hormones and enzymes, and serve as the building blocks for the creation of bone, muscle, skin and blood.

**Large Intestine: Clearing Waste**

The final stage of protein digestion occurs in your large intestine. Here, your body absorbs electrolytes, vitamins and water and transmits the unusable waste out of your body. While it's largely recommended that you get all of the essential amino acids from the food you eat, the friendly bacteria found in your large intestine may be able to manufacture the amino acids your body needs for survival from carbohydrate substrate.

**WATER**

Water is processed by our bodies through absorption. Water, also known as dihydrogen monoxide, is a simple molecule. Our bodies do not need to break this molecule into even simpler components, like how they do for large complex molecules such as carbohydrates and proteins (which are broken down to simpler monosaccharaides and amino acids respectively).

Water is in fact small enough to diffuse through the phospholipid bilayer that makes up the cell membrane in mammalian tissues; therefore water is directly absorbed into the epithelial cells which line our intestinal tract. The process of diffusion drives the movement of water across the cell membrane (this process is also known as osmosis) until the water concentration in whatever digested food is in your intestine (chyme) is the same as in your blood plasma.

In addition, water is also absorbed by our large intestines by actively absorbing sodium and chloride ions, thus creating a water potential gradient that drives the diffusion of water into the cells lining the large intestine.

Water is a fundamental component of your body (most of your body is made out of it) but thankfully it exists as a simple molecule so that we can just passively absorb into our bodies without much energy expenditure.

**SALAD** (vitamin)

Digestion of vitamins and minerals begins in your mouth, when you chew your food. When food enters the stomach, hydrochloric acid and other stomach enzymes help release its nutrients. Your pancreas helps by releasing bile that aids with digestion. From this point, the vitamins and minerals travel to the small intestine, where they are absorbed into the bloodstream. Your blood carries the nutrients to your liver, where they are used up immediately, stored for later use or sent to the kidneys for excretion through urine. The vegetables from the fried rice will also be digested this way.

**FRIED RICE** (carbohydrate)

Carbohydrates take a journey starting with the intake at the mouth and ending with elimination from your colon. There’s a lot that happens between the point of entry and exit.

1. **The mouth**

You begin to digest carbohydrates the minute the food hits your mouth. The saliva secreted from your salivary glands moistens food as it’s chewed.

Saliva releases an enzyme called amylase, which begins the breakdown process of the sugars in the carbohydrates you’re eating.

2. **The stomach**

From there, you swallow the food now that it’s chewed into smaller pieces. The carbohydrates travel through your esophagus to your stomach. At this stage, the food is referred to as chyme.

Your stomach makes acid to kill bacteria in the chyme before it makes its next step in the digestion journey.

3. **The small intestine, pancreas, and liver**

The chyme then goes from the stomach into the first part of the small intestine, called the duodenum. This causes the pancreas to release pancreatic amylase. This enzyme breaks down the chyme into dextrin and maltose.

From there, the wall of the small intestine begins to make lactase, sucrase, and maltase. These enzymes break down the sugars even further into monosaccharaides or single sugars.

These sugars are the ones that are finally absorbed into the small intestine. Once they’re absorbed, they’re processed even more by the liver and stored as glycogen. Other glucose is moved through the body by the bloodstream.

The hormone insulin is released from the pancreas and allows the glucose to be used as energy.

4**. Colon**

Anything that’s left over after these digestive processes goes to the colon. It’s then broken down by intestinal bacteria. Fiber is contained in many carbohydrates and cannot be digested by the body. It reaches the colon and is then eliminated with your stools.