

## Worksheet 3 (answer sheet): Carbohydrates as providers of energy for metabolism – Starch and sugar

### The passage of food through the human body

Our body cannot directly use the nutrients found in food. They have to be processed at various locations in the body.

The first stage of digestion already begins in the mouth. **The teeth** grind the food and thus create a larger surface area for the further decomposition of nutrients. **The saliva** in the mouth coats the food and makes it easier to travel down the esophagus. In addition, the saliva contains the enzyme amylase. It splits the long polysaccharides (e.g. starch) into smaller disaccharides (e.g. maltose). You can demonstrate this process by adding iodine solution and saliva to a starch solution. After shaking you should observe that the solution has turned a less intense purple.

**The stomach** forces the mashed food in small portions into the **small intestine**. Here more enzymes break down the disaccharides (e.g. maltose or sucrose) into monosaccharides (e.g. glucose).

**The cells** of the intestinal wall absorb the glucose molecules and diffuse them into the blood.

**The blood** then transports the glucose to the individual cells (e.g. muscle cells). Here the glucose is oxidized, producing water and carbon dioxide. The water and carbon dioxide leave the body during exhalation and excretion.

### Task

Read the text carefully. Then mark the names of the individual locations at which carbohydrates are metabolized. Transfer these names into the table and describe the processes that take place at these locations in complete sentences.

Location	Process
Teeth	They grind the food and thus increase the surface area of the food particles.
Saliva	It coats the foods and makes it easier to travel down the esophagus.
Stomach	It forces the mashed food in small portions into the small intestine.
Small intestine	Here the enzymes break down the disaccharides into monosaccharides.
Intestinal wall cells	They absorb the glucose molecules and pass them into the blood.
Blood	It transports the glucose to the individual cells.