

Promoting the Use of Educational Technology in Learning and Teaching in Science (S1-3) Learning and Teaching Resources

Digestive System



Student Worksheet
Integrated Science (S3)
Digestive System: Digestion of starch

Name :		Class :	()	Date :	
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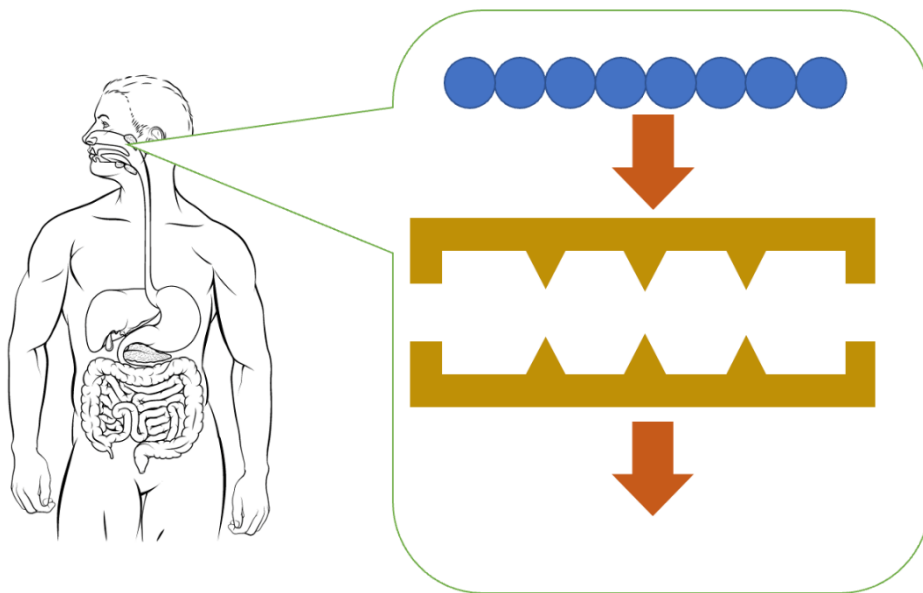
1. Starch is a kind of _____ saccharides, which are carbohydrates.
2. Examples of foodstuffs that are rich in starch:

Digestion of starch in the mouth

3. What is the role of teeth in the digestion of a piece of bread?

4. Complete the diagram below to show the chemical digestion in the mouth.

Diagram 1



5. Write two sentences to describe the digestion of bread in the mouth.

6. What is the likely pH in the mouth? Why?

Digestion of starch in the stomach

7. What is the likely pH in the stomach? Which substance changes the pH to such a value?

8. Can salivary amylase work in the stomach? Why?

9. What is the role of the stomach in the digestion of starch?

10. What is the product of the digestion of starch in the stomach? Can you describe it?

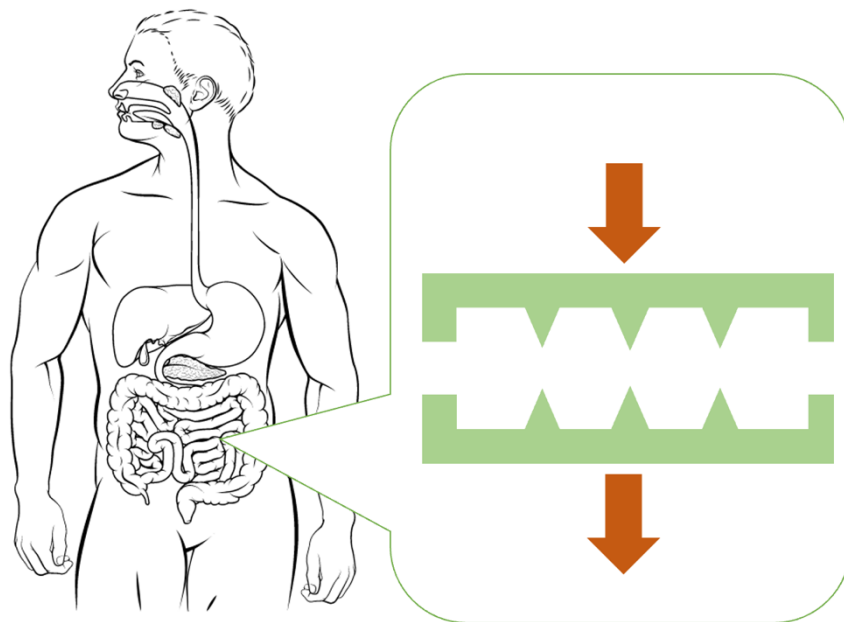
Digestion of starch in the small intestine

11. What is the likely pH in the small intestine? Which substance changes the pH to such a value?

12. The salivary amylase has been denatured in the stomach. What should the body provide for the digestion of starch to continue?

13. Complete the diagram below to show the chemical digestion in the small intestine.

Diagram 2



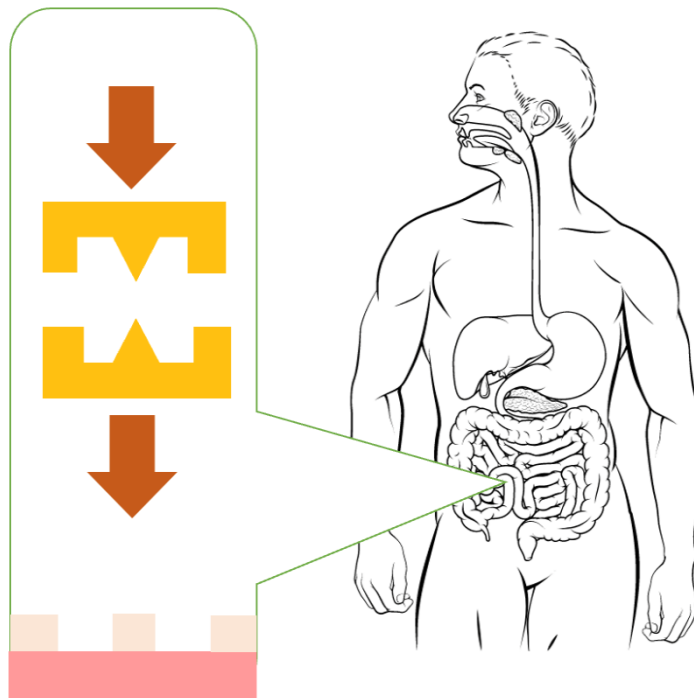
14. Write one sentence to describe the chemical digestion of starch in the small intestine.

Absorption of carbohydrates in the small intestine

15. Can the body absorb disaccharides? Why?

16. Complete the diagram below to show the absorption of carbohydrates in the small intestine.

Diagram 3



17. Write one sentence to describe the absorption of carbohydrates in the small intestine.

18. Where will the absorbed particles go? How does the human body do that?

Consolidation

19. Write a continuous prose (paragraphed text) to describe the digestion of starch. (*Don't write outside the thick black line on the right-hand side. The right margin is for the teacher's use only.*)

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Area	Performance	Teacher's Feedback
Knowledge	☺ Very good	
	☹ Satisfactory	
	☹ Need improvement	
Presentation	☺ Very good	
	☹ Satisfactory	
	☹ Need improvement	

Digestion of starch – Worksheet

Name: _____ Class: _____

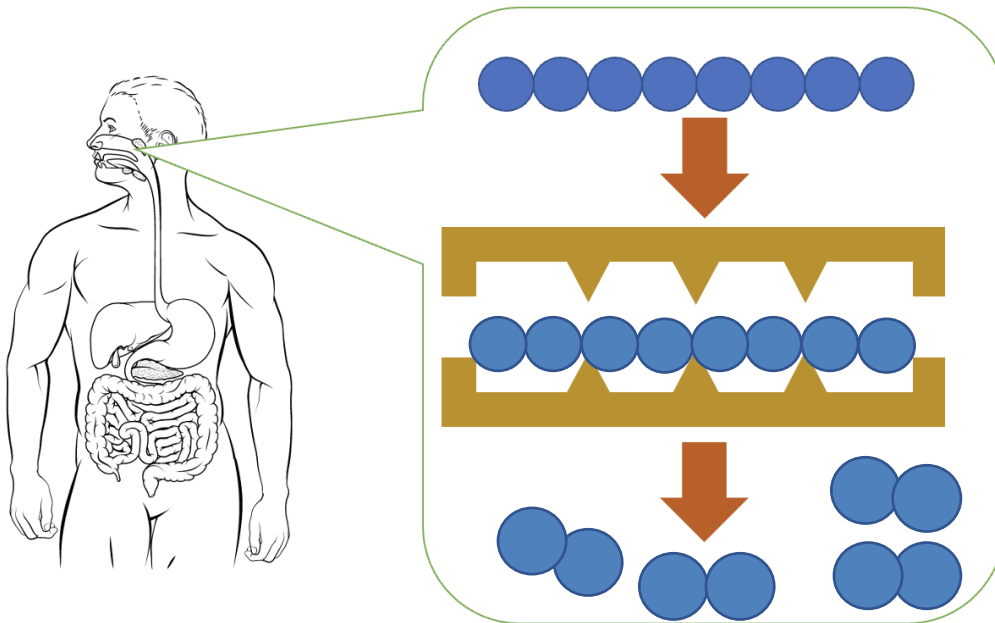
Class Number: _____ Date: _____

1. Starch is a kind of poly saccharides, which are carbohydrates.
2. Examples of foodstuffs that are rich in starch:

Rice, potatoes

Digestion of starch in the mouth

3. What is the role of teeth in the digestion of a piece of bread?
Teeth break down a piece of bread into smaller pieces, a process of mechanical digestion.
4. Complete the diagram below to show the chemical digestion in the mouth.
Diagram 1



5. Write two sentences to describe the digestion of bread in the mouth.
Mechanical digestion of the bread occurs in the mouth when teeth break down a piece of bread into smaller pieces. Chemical digestion occurs when the enzyme in the mouth/saliva helps break down the starch inside the bread into disaccharide particles.
6. What is the likely pH in the mouth? Why?
Neutral (pH around 7). This is the best pH range for (salivary) amylase to work.

Digestion of starch in the stomach

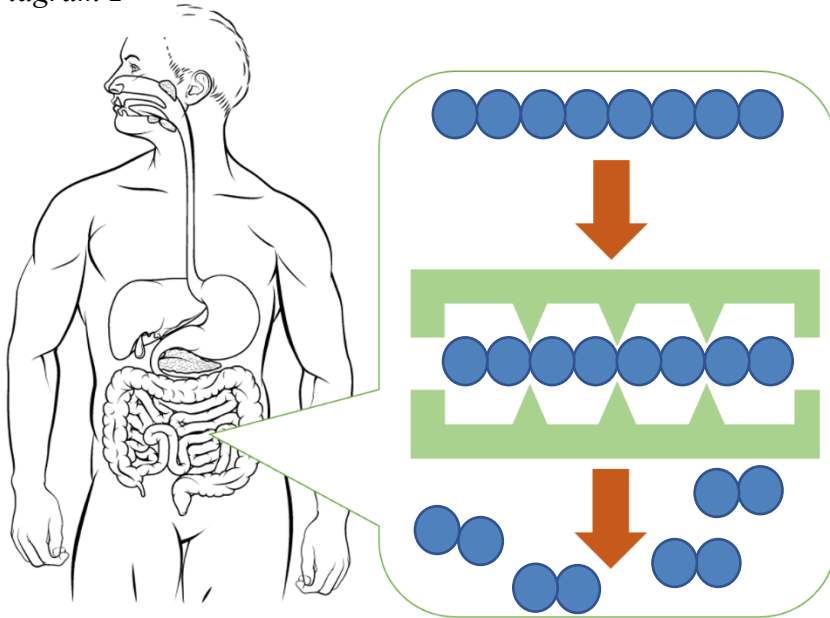
7. What is the likely pH in the stomach? Which substance changes the pH to such a value?
Strongly acidic (pH around 1 - 2) due to hydrochloric acid (in the gastric juice)
8. Can salivary amylase work in the stomach? Why?
No, salivary amylase denatures in a strongly acidic environment
9. What is the role of the stomach in the digestion of starch?
Mechanical digestion of food by churning
10. What is the product of the digestion of starch in the stomach? Can you describe it?
After digestion in the stomach, a semi-fluid called chyme is formed.

Digestion of starch in the small intestine

11. What is the likely pH in the small intestine? Which substance changes the pH to such a value?
Slightly alkaline (pH around 7 to 8) due to sodium hydrogencarbonate
12. The salivary amylase has been denatured in the stomach. What should the body provide for the digestion of starch to continue?
New amylase should be provided for the digestion of starch to continue

13. Complete the diagram below to show the chemical digestion in the small intestine.

Diagram 2



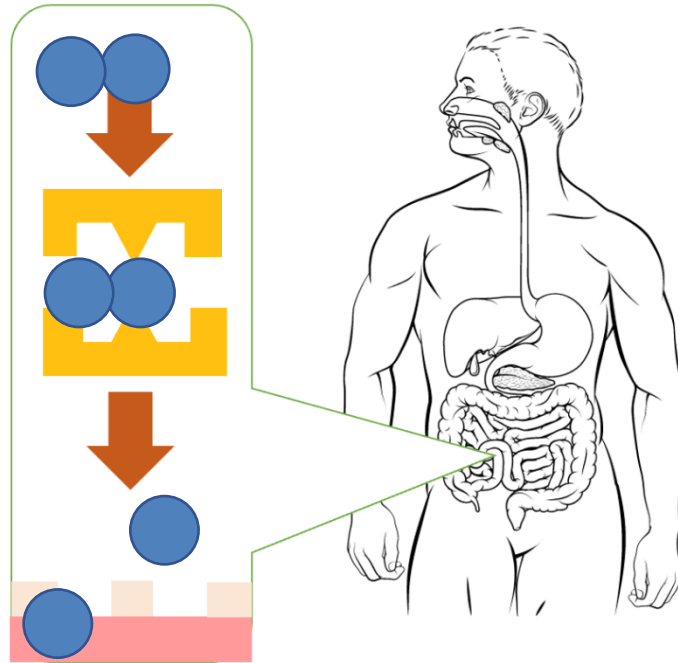
14. Write one sentence to describe the chemical digestion of starch in the small intestine.
Chemical digestion of starch occurs in the small intestine when the enzyme (amylase) helps break down the starch into disaccharide particles.

Absorption of carbohydrates in the small intestine

15. Can the body absorb disaccharides? Why?
No, the particle size of disaccharides is too big.

16. Complete the diagram below to show the absorption of carbohydrates in the small intestine.

Diagram 3



17. Write one sentence to describe the absorption of carbohydrates in the small intestine.

In the small intestine, the digestion of starch continues when disaccharide particles are broken down into monosaccharide particles with the help of the enzyme.

18. Where will the absorbed particles go? How does the human body do that?

The blood helps transport the absorbed particles to all parts of the body.

Consolidation

19. Write a continuous prose (paragraphed text) to describe the digestion of starch. (*Don't write outside the thick black line on the right-hand side. The right margin is for the teacher's use only.*)

The digestion of a piece of bread takes place in the mouth, stomach, and small intestine.

Firstly, the mechanical digestion of the bread occurs in the mouth when teeth break down a piece of bread into smaller pieces. In addition, chemical digestion occurs when the enzyme in the mouth/saliva helps break down the starch inside the bread into disaccharide particles, as shown in Diagram 1. The fluid inside the mouth is neutral; this is the best pH range for (salivary) amylase to work.

Secondly, when the wet bits of bread reach the stomach, the mechanical digestion of the bits by churning takes place. After digestion in the stomach, a semi-fluid called chyme is formed. However, since the fluid in the stomach is strongly acidic due to hydrochloric acid (in the gastric juice), the amylase denatures and the chemical digestion of starch cannot be continued.

Thirdly, when the chyme reaches the small intestine, the fluid there is slightly alkaline due to sodium hydrogencarbonate. New amylase is provided by the body for the digestion of starch to continue. As one can see from Diagram 2, the chemical digestion of starch occurs in the small intestine resumes when the enzyme (amylase) helps break down the starch into disaccharide particles.

However, the particle size of disaccharides is too big for the body to absorb.

Diagram 3 shows how the digestion of starch continues when disaccharide particles are broken down into monosaccharide particles with the help of another kind of enzyme. Afterwards, the blood helps transport the absorbed particles to all other parts of the body.

The above is how the digestive process breaks down a piece of bread into small monosaccharide particles, which the human body can absorb.

Area	Performance	Teacher's Feedback
Knowledge	☺ Very good	
	☹ Satisfactory	
	☹ Need improvement	
Presentation	☺ Very good	
	☹ Satisfactory	
	☹ Need improvement	