The company is updating the following page. Any inconvenience caused is deeply regretted.

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**Chapter 1: Stimuli and Responses** 

## Sensitivity of the Tongue towards Different Taste Stimuli

The tongue can detect **five** types of tastes which are **sweet**, **salty**, **sour**, **bitter** and **umami**. Let **\*** us investigate in Activity 1.7.

## Activity 1.7

To show that the sensitivity of the tongue towards taste stimuli is related to the number of receptors

#### Materials

Sugar solution (sweet), salt solution (salty), lime juice (sour), strong coffee without sugar (bitter), mushroom soup (umami) and distilled water

#### Apparatus

Drinking straw, handkerchief (or blindfold) and six cups

#### Instructions

- Work in pairs. Your teacher will provide each pair of students with five solutions of different tastes which are sweet, salty, sour, bitter and umami, in different cups.
- 2. Cover your partner's eyes with a handkerchief.
- Ask your partner to gargle with distilled water.
   Using a drinking straw, place a drop of sugar solution on part A of his tongue as shown in Figure 1.18.
- Ask your partner to identify the taste of the solution without pulling the tongue back into the mouth.
- Mark '√' if your partner correctly identifies the taste of the solution and 'x' if your partner incorrectly or fails to identify the taste of the solution in a table as shown below.
- 7. Repeat steps 3 to 6 on parts B, C, D and E.
- 8. Repeat steps 3 to 7 using the four other solutions provided.

Part of the tongue	Type of taste				
	Sweet	Salty	Sour	Bitter	Umami
А					
В		_			

#### Questions

- 1. Why does your partner have to gargle each time before tasting the solutions?
- 2. Which part of the tongue is able to identify all the tastes of the solutions?
- 3. Which part of the tongue is most sensitive to taste? Explain your observation.
- 4. Which part of the tongue is least sensitive to taste? Explain your observation.
- 5. What conclusion can you draw from this activity?

#### Note:

\* The information has been updated.



Inquiry-based activity



Photograph 1.9



Figure 1.18

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rigure 1.1

#### Sensitivity of the Tongue towards Taste

Sweet, sour, salty, bitter and umami tastes can actually be sensed by all parts of the tongue. The sides of the tongue are more sensitive than the middle. While the back of our tongue is very sensitive to bitter taste, the area at the centre of the tongue is more sensitive to umami taste.



Nowadays, there is a toothbrush equipped with a tongue cleaner. Does the use of the tongue cleaner reduce the sensitivity of the tongue?



# Combination of the Sense of Taste and the Sense of Smell

Look at Photograph 1.10. Can the child enjoy the fried chicken? Does the sense of smell play a role when a person tastes food? Let us investigate this matter in Activity 1.8.



*Figure 1.19 The sides of the tongue are more sensitive than the middle* 



**Photograph 1.10** Food eaten without smelling



#### Note:

\* The information related to the sensitivity of the tongue to taste has been updated to avoid confusion.

😫 Formative Practice 🚺 5.1

- Define the following types of chemical reactions: (a) Endothermic reaction
  - (a) Endothermic reaction (b) Exothermic reaction
- 2. What is thermochemistry?
- 3. Why does our body temperature increase when performing vigorous physical activities?
- 4. (a) Name one example of a global phenomenon caused by exothermic reaction.(b) Give one solution to the phenomenon mentioned in question 4(a).
- 5. (a) Name the reaction produced by materials to relieve muscle cramp.(b) Explain your answer.



#### Note:

\* The information has been updated.

## **Electricity Supply and Wiring System in Homes**

Figure 6.31 shows an example of electricity supply and wiring system in homes.



#### Note:

\* The colour of live wire is changed to brown.



## Note:

\* The colour of live wire is changed to brown.

#### 3-pin Plugs and 2-pin Plugs

Compare and contrast the structures of the 3-pin plugs and 2-pin plugs shown in Photograph 6.13.



Photograph 6.13 3-pin plugs and 2-pin plugs used in different countries

The 3-pin plug and 2-pin plug used in our country are explained in Table 6.2.

 Table 6.2
 3-pin plug and 2-pin plug in the wiring system in homes



#### Note:

\* The information has been updated.