

## **Experiment 4: Taste Challenge**

### ***Discovering the limitations of your tongue***

#### **THE SET UP**

##### **1. Summary**

Students discover some surprising facts about the link between taste and smell. They are given a taste test without the sense of sight, and then the same test without the sense of sight or smell to explore the way our noses affect our sense of taste.

##### **2. Context**

This is an appropriate experiment to accompany the topics of Senses, Diet and Nutrition.

##### **3. Apparatus**

- Sets of foods with similar texture, for example:
  - Apple, Pear, Onion and Garlic
  - Mayonaise, Ketchup and Brown Sauce
  - Lime, Orange and Lemon
- Swimming nose-clip
- Blindfold

##### **4. Preparation**

Make sure the foods you use do have similar texture to so that taste is the only sense being used (sauces work the best). If using fruit and veg, cut them into similar sized chunks.

##### **5. Safety**

Check your students' for food allergies before involving them in the experiment.

## **THE DEMONSTRATION**

### **1. Procedure**

- A blindfolded student is given samples of food to taste, and the results of their accuracy are recorded (they should be 100% correct).
- The same student puts on a swimming nose clip (to remove their sense of smell) and is again given the same food samples to taste but in a different order.
- The results are compared to show how the senses of taste and smell are linked.

Note: an alternative to using a nose clip is to hold a cotton bud soaked in an essential oil just below their nose, which removes the sense of smell from the food identification

### **2. Suggested Script Ideas**

*"Have you ever noticed that when you have a cold that you can't taste food as well. Why might that be?"*

*"Might our sense of smell be important? How might you find out?"*

*"I need a volunteer who has no food allergies to take part in this experiment."*

*"[Student is blindfolded and given the foods to taste and the results recorded.]"*

*"Now we are going to do the same test but in a different order and this time we are going to put on a nose clip so only the sense of taste is involved..."*

*"[After experiment] What do we notice?"*

## **THE CONCLUSION**

### **1. Explanation**

Our ability to taste is diminished when the sense of smell is removed by using a noseclip, showing that our senses of taste and smell work in tandem, together. When we eat, chemicals stimulate the sweet, sour, salt and bitter taste receptors that make up all flavours. The chemicals pass up our nose and stimulate the olfactory receptors. So our brain receives signals from our tongue as well as our nose and it combines these two to give us the sensation of taste.

Humans can sense up to 4000 different smells, but only four tastes (Sweet, Sour, Salt and Bitter).

### **2. Useful Questions and Answers**

#### **Q) Does anything else affect our sense of taste except our noses?**

*A) Surprisingly, the noise level does – we don't taste as well with background noise and this is one of the reasons that airline food often tastes bland.*

#### **Q) Do different people have different senses of taste?**

*A) Yes in exactly the same way that people have different abilities to hear and see. Restaurant critics and wine tasters have a very highly developed sense of taste.*