

Taste & Smell, Teacher Resource

Topic	Coverage
<p style="text-align: center;">Goals</p>	<ol style="list-style-type: none"> 1. Students will learn about taste and smell and how they work together to create flavor. 2. Students will understand that taste buds and the nose contain sensory receptors that detect different flavors and odors. 3. Students will recognize the 5 flavors of the tongue: sweet, salty, sour, bitter, and umami. 4. Students will understand the importance of the sense of smell in detecting flavors and will be able to explain how smell enhances taste. 5. Students will conduct an experiment using mberry Miracle Fruit Tablets to experience the changes in taste perception. 6. Students will learn about the Miracle Berry and its glycoprotein called Miraculin, which changes the function of sour taste buds. 7. Students will be encouraged to research other foods that contain glycoproteins and their effects on taste. 8. By the end of the lesson, students will have a deeper understanding of taste and smell and how they work together to create the flavors we experience when we eat.
<p>Taste & Smell - How it Works</p>	<p>Before conducting the experiment, it is important to understand the science behind taste and smell and how they work together to create flavor. Your tongue is an intriguing muscle in your body, covered in a membrane and taste buds. Taste buds are composed of tissue called papillae, and each tiny papillae has an opening, much like a window that can open and close. This allows the taste buds to analyze what food they are detecting to send signals to the brain, called a sensory neuron.</p> <p>There are 5 flavors of the tongue: Sweet, Salty, Sour, Bitter, and Umami. Each section of the tongue has up to 100 papillae that provide these tastes. Similarly, the nose also contains sensory receptors that can smell thousands of different odors. Without your sense of smell, your sense of taste greatly decreases. As you eat, the food molecules go through the nose to give you the taste of the whole item.</p> <p>Without smell, you can distinguish between the different 5 flavors, but would not be able to tell what dish you are eating without smell. For example, when eating spaghetti, you may be</p>



	able to tell it is salty and sweet, but you won't be able to tell what dish it is.
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Materials Needed:

- 2 spoons
- 2 slices of lemon or 1 teaspoon lemon juice
- 2 slices of grapefruit
- 3 drops of Tabasco
- 2-3 salt & vinegar chips
- 1 packet of ketchup
- 1 packet of yellow mustard
- 1 teaspoon of apple cider vinegar
- 1 mberry Miracle Fruit Tablet
- 1 paper plate

mustard to put some on their plates instead of packets. If you do not have these foods available, visit our website to see a list of the best foods to try with mberry in our blog. If you choose fewer foods, we highly recommend using lemon

- *You can also use a big bottle of ketchup and

Experiment Notes

While everyone will have different perceptions to taste with mberry, here are the normal changes:

Lemon	Lemonade
Grapefruit	Sugar covered grapefruit
Tabasco	Donut Glaze
Salt & Vinegar Chips	Sweet and Salty Snack, less bite
Ketchup	SWEet tomatoes
Mustard	Sweet mustard
ACV	Apple juice

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The Miracle Berry and Glycoproteins	After conducting the experiment, you can explain the science behind the mberry tablet and how it changes our taste buds. The Miracle Berry, which is found in West Africa, contains a glycoprotein called Miraculin. This glycoprotein is different from the rest because it is the only one that changes bodily function. Miraculin attaches to your sour taste buds and makes you only



taste sweet. Lemons turn into lemonade and grapefruit turns into pure sugar.

You can also use this experiment as a starting point to explore the relationship between glycoproteins and taste. Encourage students to research other foods that contain glycoproteins and the effects they have on our taste buds. By using this resource to guide their learning, students will gain a deeper understanding of taste and smell and how they work together to create the flavors we experience when we eat.

