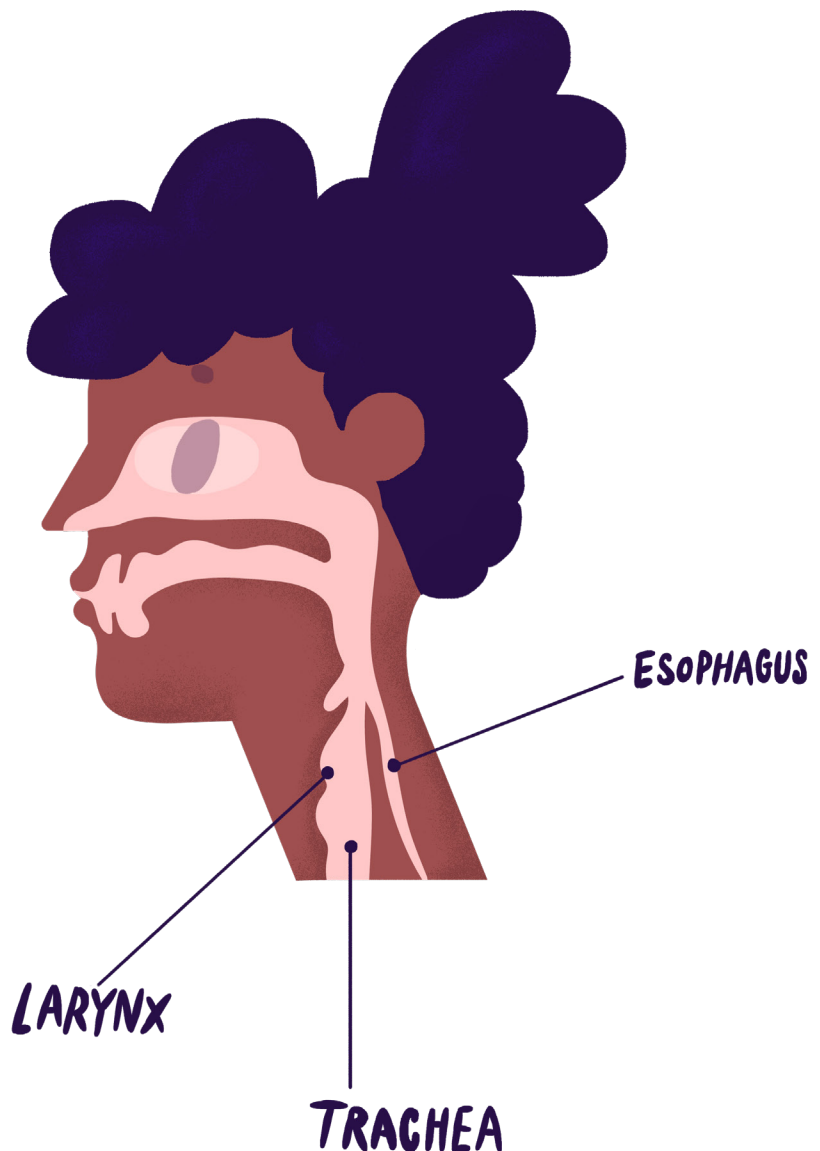


Flavour Makers

- Year 3 – Health and Physical Education
- Year 4 – Health and Physical Education
- Year 6 – Science



(Science; Yr 6, ACSSU095)

Changes to materials can be reversible or irreversible

(HPE; Yr 3&4, ACPPS036)

Identify and practise strategies to promote health, safety and wellbeing

Flavour Makers

Herbal flavours and heat

This simple experiment shows students how the properties of different herbs change once they are cooked. By applying heat we're changing the herbs' chemical structure, which unlocks flavours, aromas and nutrients.

Equipment:

Slices of apple

A kettle or access to hot water (a teacher can do this)

Several small tea pots

Fresh herbs (such as sage leaves, thyme leaves, mint leaves, lemon myrtle).

Lots of teaspoons

Lots of tasting glasses

Duration:

30 minutes

Location:

The classroom or kitchen

Notes:

Herbal Experiments

👁 Watch **The One with the Dumplings**



- ❓ Discuss with students how and why flavours change when a food is exposed to heat and/or friction (in this case, leaves and flowers of a plant).
- Explain that the flavour of the food is a specific set of chemicals made of molecules that are bonded together (stuck like Velcro). Our taste buds perceive the 'shape' of the substance and we interpret it as a flavour (salty, sweet, bitter or sour – or a combination of these, including complex smells such as floral aromas).
- When heat is applied, some of the bonds break (the Velcro rips apart). Some of the molecules even form new bonds with different substances to make new 'shapes'. When we taste the heated or cooked item, our taste buds perceive a different 'shape' than before.
- In other words, the same food tastes different when it has been cooked because it *is* different. Some flavours change structure at the molecular level when heat breaks and re-forms chemical bonds.

Taste and Smell

👁 Watch **The One with the Domes**



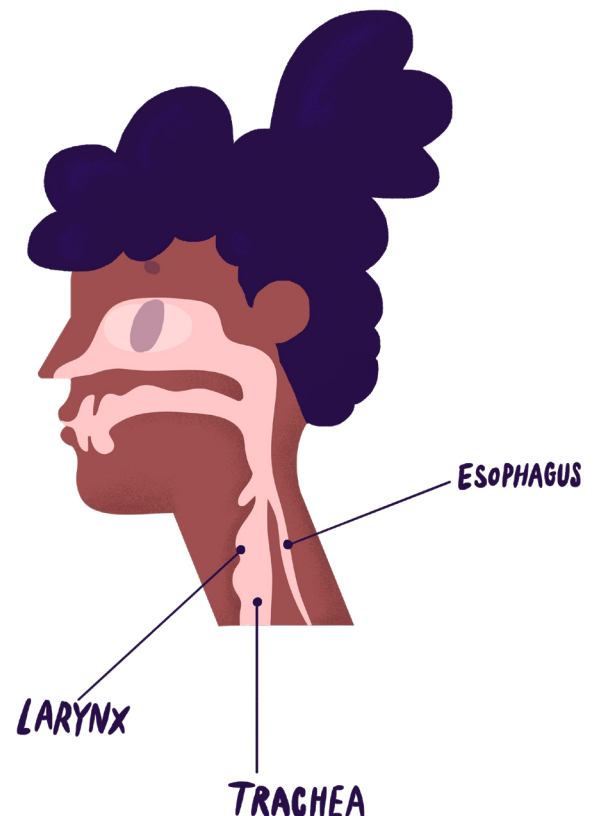
- ❓ **Discuss** how much of what we think of as taste is actually smell.
- Show students a diagram of the olfactory system and how the mouth is connected to the nasal passages at the back.
- Ask students to pinch their noses tightly and taste a piece of apple. Does it taste stronger or weaker than usual? (They can try again without pinching their noses.)
- Explain that aroma (smells) are volatile (active) molecules of the food item floating in the air. These go into your mouth which is designed to direct some of them up into your nasal passages where your nose registers the smell.
- Ask if anyone has noticed that food tastes boring when they have a bad cold – this is because their nose is blocked and the olfactory system is not able to sense aromas.

Leaf Tips

- A lot of people refer to herbal preparations like these as 'tea', but they are more accurately infusions. Tea is a drink made only from the tea plant, *Camellia Chinesis*.
- Chopping up herbs and storing them in an ice-cube tray filled up with water or oil in the freezer is a great way of getting more life out of them.

✂ Flavour Makers

- Provide leaves of fresh herbs including mint, sage and thyme.
- In small groups, students sniff and crush the herbs to release the smell. What do they smell like? Prompt for words and phrases that describe the smell rather than just 'yuck, or, yum'. It smells like a pine tree, floral, sweet, pungent, fresh, invigorating, overpowering, zesty, green and so forth...
- Students choose a few leaves to place in a small individual teapot. A teacher fills the pot with hot water and leaves it to steep for a couple of minutes.
- Students sniff the warm tea and crush uncooked leaves at the same time to compare the smell to the scent of the cold, uncooked leaves. (They can taste the tea if they like – all of the suggested herbs make palatable herbal teas.)
- Ask: do you think you could reverse the change and make the cooked leaves taste and smell like the fresh leaves? How? If students suggest cooling or freezing the herbs, give it a try! (The change is irreversible.)



A data collection sheet might look like this:

Name: Date:	Flavour Makers		
	Sage	Thyme	Mint
Fresh leaves <ul style="list-style-type: none"> ● flavour ● smell ● taste ● colour ● other observations: 			
Cooked leaves (tea) <ul style="list-style-type: none"> ● flavour ● smell ● taste ● colour ● other observations: 			

Notes – and other nice herbal infusions to try:

- Use fresh herbs for this activity.
- Keep the tasting quantities small and don't worry if no one tastes anything – smell is as important as taste in this activity.
- Use only a few leaves of each herb.
- Herbal infusions can take about 5 minutes to reach full strength.
- Encourage students to handle and crush the uncooked, raw leaves to release their volatile oils, which is where the scent is. Students may also want to handle and sniff cooled leaves fished out of the infusions. Go for hands-on (noses on) with this activity!
- Sage and mint are particularly good for this activity, because their flavour changes significantly when 'cooked' by the hot water. Thyme changes, but is so strong raw that students may not notice the change.
- Other fresh herbs to try: chamomile, lemon verbena, river mint, and rosemary.