



Slow Food®

To the Origins of Taste





Slow Food is a non-profit, eco-gastronomic member-supported organization that was founded in 1989 to counteract fast food and fast life, the disappearance of local food traditions and people's dwindling interest in the food they eat, where it comes from, how it tastes and how our food choices affect the rest of the world. Today, we have over 100,000 members in 150 countries.

The Slow Food movement organizes events and programs from the international to the local level that showcase sustainable agriculture and artisan food production, and connect producers with consumers. Our pioneering taste **education projects** help people to understand where food comes from, how it is produced and by whom, creating awareness, new markets, and positive social change.



Terra Madre is a worldwide network that gives a voice to small-scale farmers and food producers and brings them together with cooks, academics and youth to discuss how to improve the food system collaboratively. Meetings are held at the global, regional and local level and resulting projects are promoting knowledge exchange around the globe.



The **Slow Food Foundation for Biodiversity** was founded in 2003. Thanks to public and private donations, it coordinates projects in over 50 countries to safeguard biodiversity, and promotes agriculture respectful of the environment, cultural identities, traditions and the health of consumers and animals. It operates across the world through its principal projects: Presidia, the Ark of Taste and Earth Markets.

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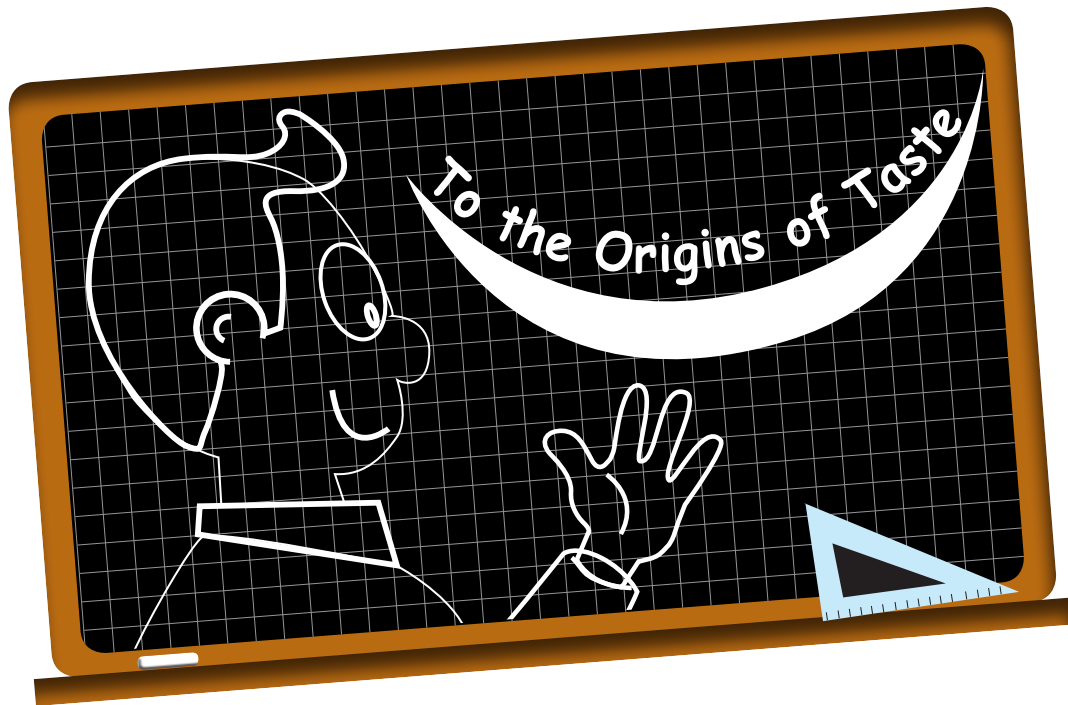
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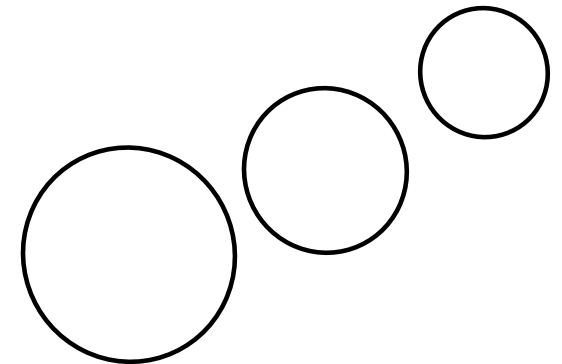
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THE SENSORIALITY OF FOOD



The sensory education journey “To the Origins of Taste” was born in order to provide a simple but fundamental approach to tasting. Through games and participation, this course provides the opportunity to train your senses and acquire basic tasting vocabulary. The journey is split into three parts: informative (video), didactic (sensory journey), and tasting (taste workshop). The first, a video, illustrates how our sense organs function and how to exercise them knowingly; the second brings together the senses in six stages with activities aimed to exercise each actual senses; the third is a tasting which allows you put into practice what you have learned in the preceding parts by combining all the senses. This journey does not put forth a strict method, but rather offers tools for everyone that can be integrated sensibly based one’s own local culture.



THE SENSES

Taste is thought to be the most important sense when eating, particularly to enjoy your food, but it isn't so. When we eat we use our five senses: sight, hearing, touch, taste and smell. These five senses are tools that help us evaluate our food and from this we draw conclusions as to our likes and dislikes. Yes, we love the taste of what we eat, but how about its smell: stop thinking about the aroma of coffee! Let's think about the textures and tactile sensations you feel in your mouth when eating an ice cream or the satisfaction you feel while biting into a crisp apple, which is also attributed to the hearing. And sight? It is surely the first thing that catches our attention; we analyze foods' characteristics to decide if they look "normal." With sight we also evaluate the aesthetics of our food, for example fruit or cheese can seem attractive or ugly. Those who taste as a profession, such as sommeliers or coffee-tasters, use their senses to judge the quality of food. There are preliminary clues such as the colour of wine that can indicate its age, or the texture of cheese can be judged rubbing it between the fingertips. Smell provides even richer information, details and stimulants about the food we eat.

2.1 TASTE

When we eat, substances supplying flavour alert the taste buds on our tongue and palate.

The substances giving the odours of the food are then released freely into the air. The circulation of air between the mouth and nose permits odour substances to collect in the nasal cavity where the olfactory receptors in our nose, along with receptors on our tongue and palate, interpret flavours. So when we eat the aromas of food are released through chewing and digestion. The mouth and nose communicate while taste and smell work together to interpret characteristics of what we eat or drink.

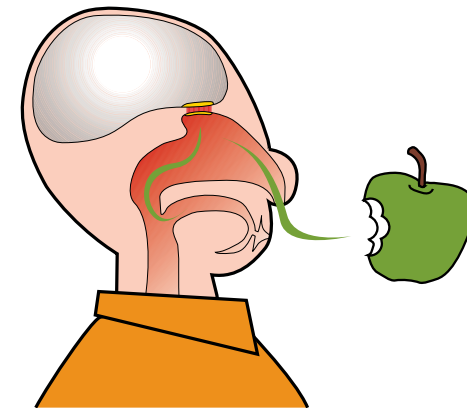


Fig. 1: Aromatic substances pass via the nostrils or retro nasal to reach our sensory organs.

When we have a cold or when our nose is stuffed up it reduces our sense of smell and the perception of taste varies.

The mucous membrane of our oral cavity is abundant with nerve endings that reveal texture sensations such as consistency, graininess and viscosity.

Taste buds (taste receptors) are found on the surface of the papillae on the tongue. Five different types of taste receptors have been identified: sweet, bitter, sour, salty and umami (the taste of glutamate). When the receptors combine themselves with food molecules, for example sugar, an electrical impulse is transmitted to the brain for the final taste analysis.

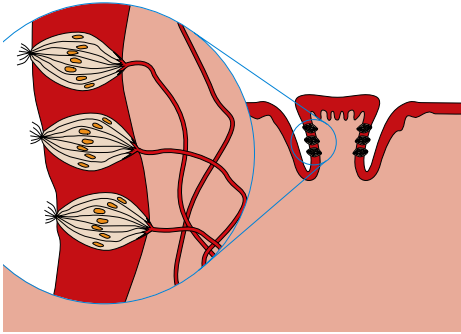


Fig. 2: The papillae on the tongue host many taste buds where different taste receptors are positioned.

For many years it was believed and written in many books that only four tastes existed, but scientific research that began in the 1990's permitted the discovery of five different taste receptors: sweet, bitter, sour, salty and umami (a Japanese word to describe savoury). Umami derives from natural amino acids and glutamate. It is described to have the flavour of "meat stock" because it is often used in cubes to make broth. Monosodium glutamate is used to increase the savouriness and heartiness of food in cooking.

Many maps still exist distinguishing only four tastes in certain areas of the tongue; these are outdated because actually the entire surface of the tongue is able to distinguish all taste sensations.

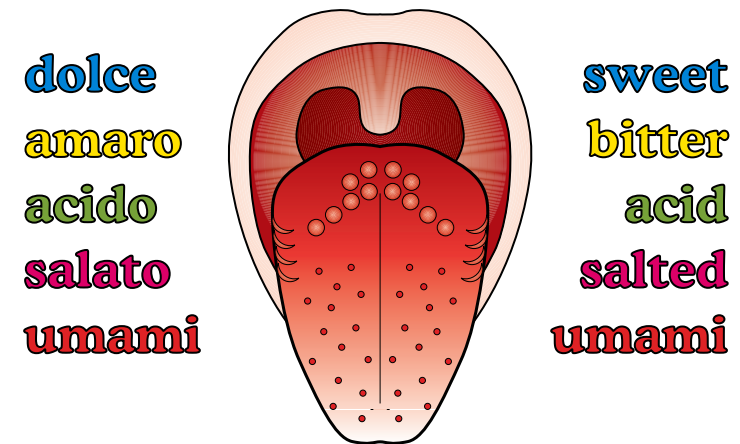


Fig. 3: The five fundamental tastes.

2.2 THE SIGNIFICANCE OF TASTE

The number of taste receptors vary: there is one taste receptor for acid, three combined receptors for sweet and umami, and 30 different receptors for bitter.

During the biological evolution of man the development of different types of taste receptors was quite remarkable, especially that of bitter, which is justified by the fact that many toxic substances are characterized by a bitter taste and are chemically diverse.

In general, taste developed during the mammalian phase of evolution as a system to determine if food was safe or dangerous to eat. The preference for sweet foods has great significance in research on foods with high caloric value, umami relates to foods which are high in protein, and food with a high salt content relates to the necessity of ingesting a certain amount of mineral salts.

Normally, the human population has an aversion to foods that are acidic and bitter. The presence of high acidity in food can signal that the food is spoiled and fermented beyond a desirable level.

These innate habits are influenced by the customs and food culture of a population. The appreciation of salty and above all bitter food depends on how accustomed one is to eating food that is conserved, pickled or preserved under salt.

The aversion for bitter food is also due to the fact that many harmful compounds have a bitter taste, but our body has developed a defence system against these risks. These have a bitter, alkaline taste that is mostly found in the kingdom of vegetable species. In fact, 100.000 alkali exist naturally which are characterized by levels of toxicity (strychnine, atropine); or their effects on the nervous system such as stimulants (caffeine, teobromina), or drugs (such as cocaine, mescaline). The crucifer family of vegetables (cabbage, broccoli) contains bitter compounds. Goitrin, a goitrogenic substance isolated from rutabagas and turnips, interferes with the absorption of iodine in the thyroid facilitating the formation of goitre.

On the other hand it is also true that different types of food, some vegetables in particular (radicchio, artichokes) have a positive role in our diet, but are not readily eaten due to their bitter taste.

2.3 TASTER OR NONTASTER

There are two principle typologies that have been defined to describe one's ability to perceive bitterness; tasters, who are highly sensitive to bitterness and non-tasters who are less sensitive.

Children are highly sensitive to bitterness but this slowly decreases with age, which is particularly evident in women, who as adults or seniors consume more bitter foods that they would have most likely refused as children. The perception of bitterness is typically a genetic characteristic that is passed on from parent to child.

Taste sensibility varies widely around the world: 3% of the population of West Africa, 40% of the Indian population and 30% of North American Caucasians are non-tasters. In Italy, research is being done on the genetics of taste in isolated, genetically homogenous populations (small villages) that share the same environmental influences. The preliminary data gathered indicates that 37% are non-tasters.

2.4 JOKING AROUND WITH TASTE

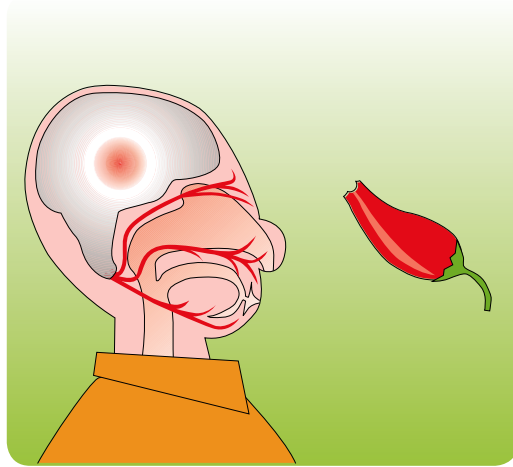
It is possible to effectively measure the potency of taste when two or more tastes are mixed together at the same time, such as sour and bitter or lessening the potency between sweet and sour or bitter both by adding minimal amounts of sugar.

Exposure to a tasteful substance causes adaptation, a phenomenon that also derives from smell and texture; with time the intensity of the stimuli decreases. There is a large secretion of saliva when a sour element enters the oral cavity, which helps to minimize the perception of acidity.

The intensity of taste perception is stronger if two aromas are present, especially if they are compatible (sweet and fruity). On the contrary: the aromatic perception is intensified with a incompatible taste.

2.5 HOT AND ASTRINGENT

There are sensations in the oral cavity that are not necessarily classified as taste or texture. One of these is the sensation of hot or spicy. When we eat a chilli pepper, the capsicum molecule is dissolved in our saliva resulting in a burning sensation triggered by the trigeminal nerve that can also perceive heat, cold and pain. Although spicy is not a taste, it is a trigeminal sensation. Similar substances to capsicum are piperina (pepper), allicina (garlic) and zingerone (ginger). This nerve is also stimulated by the menthol molecule, which gives a cold sensation.



Artichokes, unripe fruit, tea and red wine contain tannins that can reduce lubricants in saliva resulting in a sensation called astringent, leaving the mouth dry and rough.

Fig. 4: The trigeminal nerve, responsible for the sensation of spiciness.

2.6 THE HUMAN NOSE

Smell is a sense with the ability to evoke memories and emotions, even if it is sometimes viewed as being scarcely useful for humans. For animals it has a fundamental importance: to find food, to escape from predators or to receive stimuli when mating.

It is also estimated that man is able to distinguish between 10.000 different odours thanks to the olfactory organ located in the nasal cavity, even if the concentration of fragrant substances in the air is only a few molecules per million.

For most people, recognizing an odour that is not in our view is very difficult. Often it is easier to classify the typology of an odour and identify what family it derives from, such as the smell of flowers, of fruit, or smokiness, rather than identify the exact odour because our olfactory memory is neither stimulated often nor precisely trained. Our sense of smell is continuously working, but we almost never use it as an analytical sense to recognize olfactory

sensations that we understand. When all is said and done, our sense of smell is no longer necessary for our daily survival.

2.7 OLFACTION

The olfactory epithelium, a sensory organ that perceives odours and aromas interacts with odour molecules that enter directly through the nose or that come up from the mouth. The olfactory epithelium is composed of millions of neurons, with specific receptors that combine odour molecules and then generate an electrical impulse. The neurons transmit the signal to the olfactory bulb, then to the cortex and simultaneously to the limbic system, the

archive of memories and emotions.

We have 350 different types of receptors that can perceive over 10,000 different odours when stimulated. There thus exists a code of odours. Every fragrant substance stimulates a different combination of receptors that had not however been deciphered and understood.

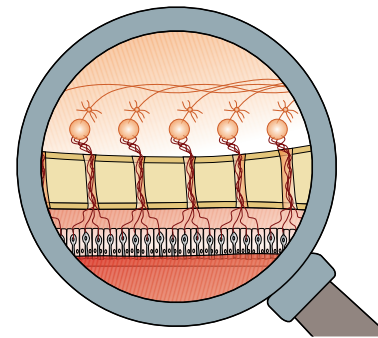


Fig. 5: The neurons of the olfactory epithelium.

2.8 TOUCH AND HEARING

When we eat we also perceive tactile sensations, like crispy, crumbly, chewy, smooth, coarse, grainy, and viscous. These sensations are brought on by nerve endings on the taste buds, which provide information on food consistency and texture. While chewing, auditory sensations perceived can even suggest tactile sensations, like for example if a food is crispy, etc.

2.9 FLAVOUR

The sensations experienced while eating; taste, trigeminal, tactile, olfactory and auditory, involve a specific part of the brain, but then are all later conveyed to the frontal cortex, the centre of consciousness, where they merge into a single elaboration.

This final elaboration is an Anglo-Saxon term referred to as flavour.

The International Organization for Standardization (ISO) defines flavour as: "a complex combination of sensations: olfactory, taste and trigeminal perception during tasting. Flavour can be influenced by tactile, temperature, pain or kinaesthetic effects."



Fig. 6: Sensations that refer to our senses involve different areas in our brain, but then merge at the frontal cortex where a cerebral "image" of the taste is processed, this is what we call flavour.



SENSORY JOURNEY - EXERCISES

In this chapter you will find the exercises proposed at the six stations of the sensory journey "To the Origins of Taste." Each paragraph is dedicated to a particular sense, providing also in the end an interactive poly-sensorial exercise involving the five senses all together. The exercises are articulated first with an explanation and second with charts to be completed throughout the course of the journey. Have fun!



3.1 TASTE

TASTE - Exercise 1

What kind of taste do you have?

The population is divided into two groups: Tasters, who are sensitive to bitter and Non-tasters, who are less sensitive to bitterness. Are you a Taster or a Non-Taster? Do you know that this conditions your eating habits?

Let's find out together with the Taste Test.

There is a small piece of paper in front of you that contains a substance that stimulates the perception of bitter, the Thiourea. Now, drink a bit of water.

- Put the piece of paper on the tip of your tongue and hold it there for 30 seconds;

- with an X mark the scale according to the intensity of bitterness that you perceived.



- Go to section 5, par. 5.1 exercise 1 to discover if you are a Taster or a Non-Taster and then read about your food preferences.

TASTE - Exercise 2

Identify different tastes

In front of you there are five numbered glasses that contain the five tastes dissolved in water (sugar, tartaric acid, salt, glutamic acid, and cinchona extract).

- Taste the contents of each glass, one at a time; remember to rinse your mouth out with water between each tasting;
- on the chart below connect the number of each glass to the taste identified with an arrow.

Glass N°		Taste identified
1		Sour
2		Bitter
3		Sweet
4		Salty
5		Umami

- Go to section 5, par. 5.1 to discover the solutions to exercise 2.

TASTE - Exercise 3

Identify the other sensations in the mouth

There are three glasses labelled A, B and C. In each one extracts of menthol, tannin, and chilli pepper were dissolved.

- Taste the contents of each glass, one at a time and remember to rinse your mouth out between each tasting;
- on the chart below, connect the number of each glass to the taste identified with an arrow (the same method in exercise 2).

Glass		Sensation in the mouth
A		Astringent
B		Fresh
C		Hot

- Finish the tasting and complete the charts. The solution to exercise 3 can be found in section 5, par. 5.1.

3.2 SIGHT

SIGHT - Exercise 1

The eye plays its role!

The kit in front of you contains 16 coloured tiles with varying tones. For the exercise put the tiles in order from the brightest to the darkest hue, therefore identifying the gradation of tones.

- Go to section 5, par. 5.2 to discover the solutions to the exercise 1.

SIGHT - Exercise 2

Transparent, misty or cloudy?

There are 3 transparent containers numbered one to three. Observe each one and match it to its appearance in the chart below.

Container N°		Appearance
1		Transparent
2		Misty
3		Cloudy

- Go to section 5, par. 5.2 exercise 2 to find the solutions.

3.3 SMELL

SMELL - Exercise 1

Can you identify the aroma?

In front of you there are six containers with a fragrance inside.

Put your nose close to each container and inhale the aromas released from the holes. Then try to guess the aroma of each container and complete the chart below for the aromas that you identified.

Container N°		Contents
1		Banana
2		Coffee
3		Cinnamon
4		Garlic
5		Onion
6		Vanilla

- Go to section 5, par. 5.3 exercise 3 to find the solutions.

SMELL - Exercise 2

Can you identify the intensity of the aroma?

In front of you there are three containers holding liquids with aromas of different intensities. After you have smelt each one complete the chart below deciding on which has the most intense aroma to the least intense aroma.

Intensity of aroma	Container N°
Undetectable	
Moderate	
Strong	

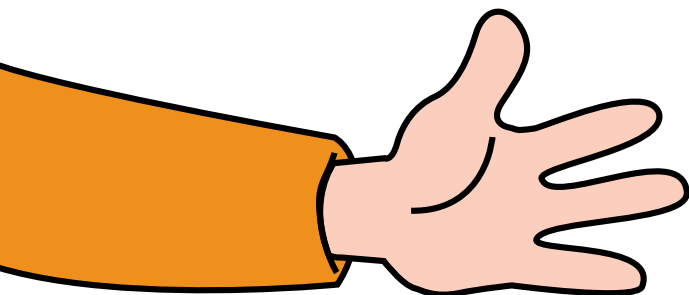
- Go to section 5, par. 5.3 exercise 2 to find the solutions.

3.4 TOUCH

TOUCH - Exercise 1

It's a question of skin sensitivity!

In front of you there are three boxes with holes in them. Start by inserting your hand into box n.1 and touch the surface of each product. As you do this identify the characteristics of each surface and write down all the adjectives that you can think of. Once you have finished the description of each product continue with the second and third box.



Box	Description
1	
2	
3	

Example

Box	Description
3	Surface: irregular but smooth, round shape ...

- Go to section 5, par. 5.4 exercise 1 to find the solutions.

TOUCH - Exercise 2

The texture of food

In front of you there are two lettered boxes with a hole. Insert your hand to identify the texture of what you touch: rubbery, flexible, crumbly, hard, doughy, sticky... Complete the chart below with your description.

Box	Description
A	
B	

- Go to section 5, par. 5.4 exercise 2 to compare your answers.

3.5 HEARING

HEARING - Exercise 1

Do you eat with your ears?

In front of you there are six audio devices marked with a number connected to earphones. Put these on one at a time. Can you identify the sound?

In the chart below write down the sounds you identified.

N°	Sound identified
1	
2	
3	
4	
5	
6	

- Go to section 5, par. 5.5 to verify your answers.

3.6 POLYSENSORY

POLYSENSORY - Exercise 1

What sensation do you feel in your mouth?

In front of you there are two glasses numbered 1P and 2P containing a solution with tannins. One of the glasses also contains a bit of pectin, which thickens the water. Taste the contents of each glass remembering to rinse your mouth out between each tasting.

Answer the following questions:

1- What sensations did you feel in your mouth after you tasted the contents in glass number 1P?

2 - What sensations did you feel in your mouth after you tasted the contents in glass number 2P?

3 - Which solution is more astringent?

- ☐ Glass n°1P
- ☐ Glass n°2P
- ☐ Glass n°1P and n°2P have the same amount

- Go to section 5, par. 5.6 to find the solutions to the questions.

4

TASTING

We use descriptors to “understand” and describe the characteristics of what we eat. These relative descriptors include the following:

- 5 taste sensations - sweet, salty, sour, bitter and umami;
- aromas - the complexity of aromas, the intensity of aromas, the identification of specific or recognizable aromas, such as fruity, toasted, and the aftertaste (the duration of time the aroma lingers in the mouth);
- trigeminal sensations (spicy) and texture (smooth, rough);
- sounds (crunchy) and visual (colour, transparency).

To test your senses you will taste three different types of apples and three different types of chocolate.

Taste small morsels of each first. You should taste them slowly while concentrating on all the sensations you perceive relative to taste, smell, touch and all the sensations you feel.

Follow the voice instructions and complete the chart. One could think of many descriptors to describe food but we ask you to only use five that are particularly significant.

4.1 APPLE TASTING

Before you start, imagine five descriptors (adjectives) that you think could be used to describe the organoleptic profile of an apple. They can be adjectives referring to taste, texture, sound, trigeminal or sight. It will help you to take a nibble from each one.

You have a few minutes to choose 5 descriptors.

1 _____

2 _____

3 _____

4 _____

5 _____

We have chosen 5 descriptors to assist you define a simple but adequate profile: bitterness, sweetness, juiciness, crunchiness, and intensity of the aroma. Please use them in the next exercise to taste the three different types of apples in sequence. As you do this try to identify which one is the most bitter, the sweetest, the juiciest, the crunchiest and the one with the most intense aroma. With an X mark the corresponding box. Go to section 6, par. 6.1 to find the solutions.

Apple Variety	Acidity	Sweetness	Juiciness	Crunchiness	Intensity of aroma
1. Golden Delicious					
2. Granny Smith					
3. Grigia di Torriana					

You may find difficulty to categorize the apples using the descriptors because a variety may be particularly balanced, original and most agreeable to your liking. This depends on personal taste and “food memories” that you have. Write down your favourite one.

4.2 CHOCOLATE TASTING

Think of five descriptors (adjectives) that you would use to describe chocolate. If you turn the page you will see our descriptors. You can take a nibble from each one to help you out. You have a few minutes to choose five descriptors.

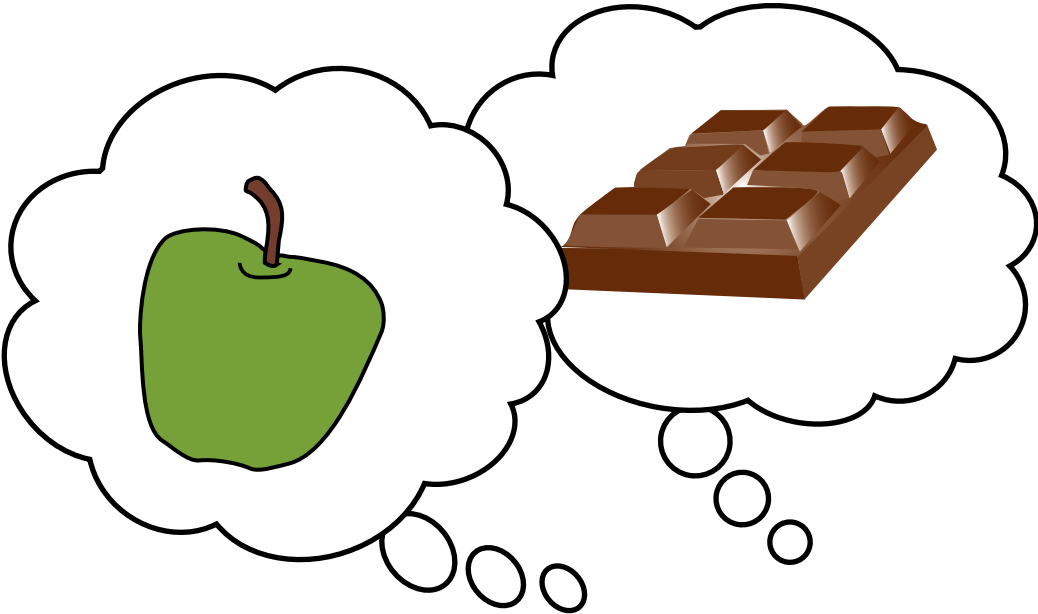
- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

We have chosen five descriptors to assist you: sour, sweet, bitter, consistent and intensity of aroma. Now, taste the three different types of chocolate in sequence. As you do this try to identify the most bitter, the sweetest, the most acidic (even though we are not used to identifying acidity in chocolate, it is important), the most consistent (does it uniformly coat the mouth, granular, smooth) the strongest aroma (the aroma released as you chew).

Type of chocolate	Bitterness	Sweetness	Acidity	Consistency	Intensity of aroma
A. Dark Novi					
B. Dark Lindt					
C. Dark Domori					

Go to section 6, par 6.2 to see our solutions.

As in the apple exercise it may be difficult to categorize each variety using the descriptors but choose the one that you liked best. Write down your favourite one.



5

SOLUTIONS TO THE EXERCISES

In this section you will find the solutions to the exercises in section three grouped in paragraphs under the same headings.

5.1 TASTE

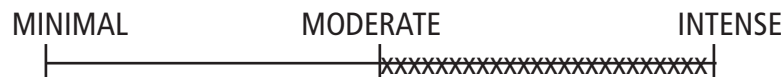
TASTE - Solutions to Exercise 1 - What kind of taste do you have?

You are a NONTASTER, if you marked an X on the scale in this range:



Non-tasters have the tendency to eat bitter, very sweet foods; tend to dress salad heavily, and also can tolerate spicy foods including those with garlic and onion.

You are a TASTER, if you marked an X on the scale in this range:



Tasters tend to dislike bitter foods such as broccoli, cabbage, chicory, radicchio, coffee without sugar, beer, tonic water, grapefruit, and liver etc.

Moreover tasters are particularly sensitive to spiciness. They tend to dress their salad lightly and are not crazy about sweet foods.

TASTE - Solutions to Exercise 2 - Identify different tastes

Glass N°		Taste identified
1	→	Sour
2	→	Bitter
3	→	Sweet
4	→	Salty
5	→	Umami

TASTE - Solutions to Exercise 3 - Identify the other sensations in the mouth

Glass		Sensation in the mouth
A	→	Astringent
B	→	Fresh
C	→	Hot

5.2 SIGHT

SIGHT - Solutions to Exercise 1 - The Eye Plays its Role!

Once you have finished positioning the tiles in order of tone gradation turn the box upside down and check if you put the tiles in the correct order by comparing to the numbers on the border of the box. If some tiles are in the wrong order you can easily reposition them following the numbers to give you full view of the correct gradation.

SIGHT - Solutions to Exercise 2 - Transparent, Misty or Cloudy?

Container N°	Appearance
1	Transparent
2	Misty
3	Cloudy

5.3 SMELL

SMELL - Solution to Exercise 1 - Can you identify the aroma?

Container N°	Contents
1	Banana
2	Coffee
3	Cinnamon
4	Garlic
5	Onion
6	Vanilla

SMELL - Solutions to Exercise 2 - Can you identify the intensity of the aroma?

Intensity of aroma	Container N°
Undetectable	3
Moderate	2
Strong	1

5.4 TOUCH

TOUCH - Solutions to Exercise 1 - It's a question of skin sensitivity!

Box	Description	Product
1	Irregularly round, as big as an apple. Hard, smooth surface that causes friction	Apple
2	Oval form, as big as an egg. Hard but delicate under pressure, coarse, dry	Kiwi
3	Cylinder with a pointy base, somewhat round, long form. Hard, smooth surface, irregular cut and roughness, cold	Carrot

TOUCH - Solutions to Exercise 2 - The texture of food

Box	Description	Product
A	Rubbery	Rubber balls
B	Doughy	Play dough

5.5 HEARING

HEARING - Solution to Exercise 1 - Do you eat with your ears?

N°	Sound identified
1	Cutting vegetables
2	Frying/sizzle
3	Eggs cracking
4	Boiling water
5	Setting the table
6	A bottle opening

5.6 POLYSENSORY

POLYSENSORY - Solution to Exercise 1

What sensations do you feel in your mouth?

1 and 2 - The sensation in your mouth caused by the two solutions of water and tannic acid is ASTRINGENCY.

3 - The solutions in the glass have the same amount of tannin, but the pectin present in the first glass masks the astringency, which results in the second solution being more astringent.

CRUNCH!



6

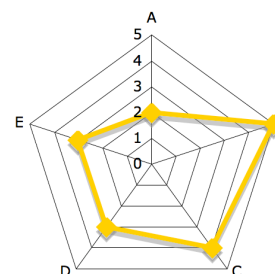
TASTING SOLUTIONS

6.1 APPLE TASTING

Apple variety	Acidity	Sweetness	Juiciness	Crunchiness	Intensity of aroma
1. Golden Delicious		X	X		
2. Granny Smith	X			X	
3. Grigia di Torriana		X			X

Apple variety	A. Acidity	B. Sweetness	C. Juiciness	D. Crunchiness	E. Intensity of aroma
1. Golden Delicious	2	5	4	3	3
2. Granny Smith	5	2	3	5	2
3. Grigia di Torriana	3	5	3	2	4

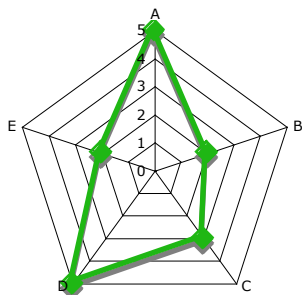
Golden Delicious Profile (1)



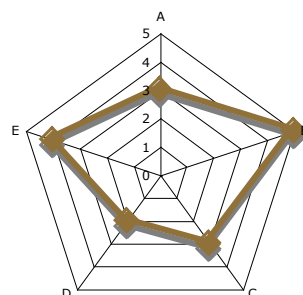
We have completed a chart below while tasting each apple scoring them according to the descriptors 1 (minimum) and 5 (maximum). The results can be seen on the pentagonal graph to the left where each axis represents a descriptor. The numerical values that you see on the graph show our results during the tasting for each apple (the vertical pentagon letter = letter descriptor on chart legend).



Granny Smith Profile (2)



Grigia di Torriana Profile (3)



Information on the 3 apples:

- **Golden Delicious (1):** The fruit (when fresh from the tree) is exceptionally sweet, almost like eating raw sugar cane. It can be used both for dessert and cooking purposes, and it also has an attractive appearance - which can indeed be golden if left to mature on the tree. Some tasters however see Golden Delicious as sugary, bland and boring. Golden Delicious grows well in a warm and sheltered microclimate. The Golden Delicious apples often found in the supermarket can be described as having more granular and softer flesh than Granny Smith with a sweeter more balanced taste and richer texture sensation in the mouth.
- **Granny Smith Apple (2):** Popularized in the second half of the 1800's in Australia by Maria Anne Smith, and later given her name, this variety became one of the original staple supermarket varieties, and one of the first international varieties, a role for which it was well suited. The tough skin and amazing keeping qualities meant it could easily be shipped around the world. It requires a hot climate to ripen properly. The trademark apple-green skin requires warm days and nights. There is only one word to describe the taste of Granny Smith: acidic. It is an uncompromising crisp hard apple with a very sharp taste, however it is not very sweet nor aromatic.
- **Grigia di Torriana** also called **Grey Pippin Apple of Torriana (3):** This old Piedmontese Heritage Variety takes its name from the characteristic of its peel, completely rusty brown, and from the homonymous town of Barge,

where it is grown and where its origin lays. It has an early blooming season, precisely the second week in April whereas it is picked during the second ten days of October. The fruit has a flattened aspect, medium size, a short and medium-short peduncle, rough peel, 100 % rusty-coloured with large lentils. Its pulp is of a course texture, its taste slightly sour and delicate and its colour a creamy white.

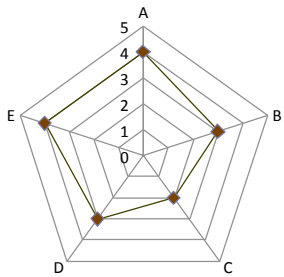
6.2 CHOCOLATE TASTING

Type of chocolate	Bitter	Sweetness	Acidity	Consistency	Intensity of aroma
A. Dark Novi		X			
B. Dark Lindt	X		X		
C. Dark Domori				X	X

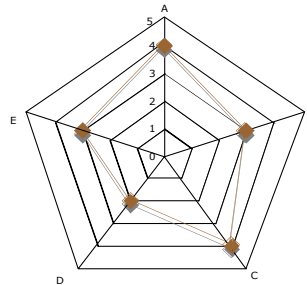
In the chart below we scored the chocolate from 1 to 5 during our tasting. The purpose of the chart and number values was to elaborate graphically the pentagon that follows. The numbers in the vertex of the pentagon correspond to the descriptors indicated by the same number in the legend of the chart.

Type of chocolate	A. Bitter	B. Sweetness	C. Acidity	D. Consistency	E. Intensity of aroma
A. Dark Novi	4	3	2	3	4
B. Dark Lindt	4	3	4	2	3
C. Dark Domori	3	3	2	5	5

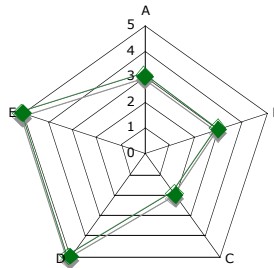
Novi Profile (A)



Lindt Profile (B)



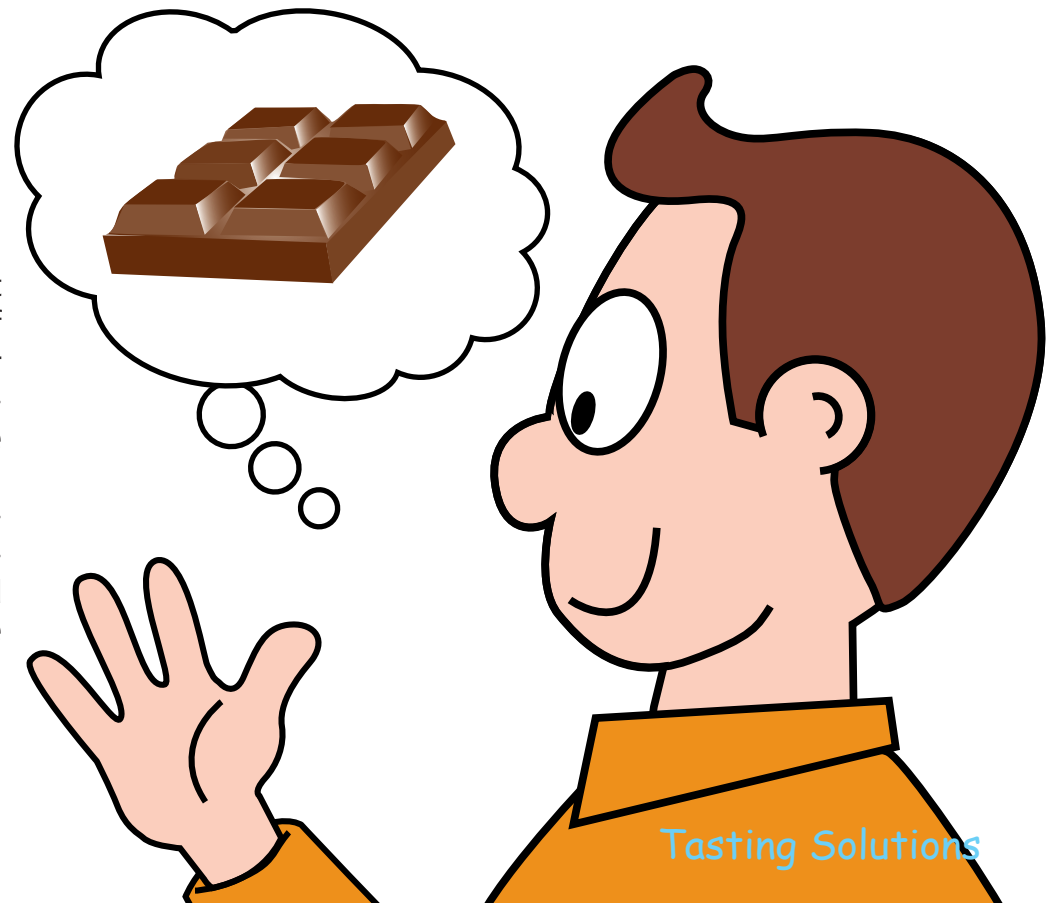
Domori Profile (C)



Information on the types of chocolate:

- **Dark Novi (A):** 72% chocolate (this percentage indicates the total amount of cocoa product present, namely cocoa mass and cocoa butter). The rest of the ingredients are sugar, cocoa powder and flavorings. It is a synthetic flavor (vanillin), which is vanilla extract, easily identified in tasting as it is an intense aroma, very intrusive, rather artificial and one-dimensional. Much more enjoyable and complex tastes result from flavoring with vanilla beans.
- **Dark Lindt (B):** chocolate from an excellent line, 70% cocoa. The ingredients include cocoa, cocoa butter, sugar and Bourbon vanilla bean. Produced in Switzerland, Lindt & Sprüngli. It has a well-perceived acidity and maintains bitterness (all 70% chocolate does). The flavour of vanilla is more moderate.

- **Dark Domori (C):** 70% chocolate, it contains cocoa and cane sugar. There is no butter added which elevates the consistency (viscosity), which coats the mouth fully. Laboratory tests have verified that it has an elevated melting threshold, which signifies that more effort is needed for it to “spread” in the mouth, in respect to other chocolate. It is made with “Sur del Lago” cocoa, an aromatic trinitario cocoa from Venezuela: which explains its intense aroma, with sweet and round notes; vanilla is not present and the aromas derive only from the chocolate, demonstrating the quality of chocolate. The sweet aromas may deceive you into thinking that it is sweeter than it really is (although it may have seemed sweeter it has the same amount of sugar as Lindt). Produced by Domori (None, Turin - Italy).



7

EXERCISE RECIPIES

With the following you will find some suggestions for how to prepare and present the exercises.

TASTE

Taste - Exercise 1

You can obtain the papers at www.carolina.com

Product: Thiourea Paper-Contains 100 sheets (these can be torn in half)

Item number: 174030

Price: \$4.10

Taste - Exercise 2

SWEET

Bottle/Glass 1: solution of water and sugar

Dissolve 8 teaspoons of sugar in a 1 litre bottle of mineral water.

SOUR

Bottle/Glass 2: solution of water and tartaric acid

Dissolve 1 level teaspoon of tartaric acid in a 1 litre bottle of mineral water.

Alternative suggestions:

Use citric acid or lemon juice.

UMAMI

Bottle/Glass 3: solution of water and glutamate acid

Dissolve 1.5 level teaspoons of glutamate acid in a 1 litre bottle of mineral water.

Alternative suggestions:

Use soy sauce or beef broth.

SALTY

Bottle/Glass 4: solution of water and salt

Dissolve 2 teaspoons of salt in a 1 litre bottle of mineral water.

BITTER

Bottle/Glass 5: solution of water and cinchona extract

Dissolve 3-5 teaspoons of cinchona extract in a 1 litre bottle of mineral water.

Alternative suggestions:

Solution of 0.8 g of caffeine (available at pharmacies) or 1 teaspoon of instant coffee dissolved in 1 litre of mineral water.

TASTE - Exercise 3

ASTRINGENT

Bottle/Glass A: solution of water and tannic acid. Dissolve 2 teaspoons of tannic acid in a 1 litre bottle of mineral water.

Alternative suggestions:

Use artichokes or unripe persimmons.

SPICY

Bottle/Glass B: solution of water and powered cayenne pepper
Dissolve 1 teaspoons of powered cayenne pepper in a 1 litre bottle of mineral water.

FRESH

Bottle/Glass C: solution of water and essential oil of mint
Dissolve 1 or 2 drops of essential oil of mint in a 1 litre bottle of mineral water.

SIGHT

SIGHT - Exercise 1

Coloured Disks of different shades.

Where to buy them:

Compagnia Ottica Italiana SNC Via Pagini 10, 20131 Milano, Italy
Tel. +39 02 92526650; email: info@coivision.com

Alternative suggestions:

Cut up pieces of coloured paper of diverse shades.

SIGHT - Exercise 2

-Small Container 1

150 ml of water and 1 level teaspoon of talcum powder

-Small Container 2

150ml of water

-Small Container 3

150 ml of water and a pinch of talcum powder

SMELL

SMELL - Exercise 1

You need a non-transparent box that can be opened and with a hole(s) so that odours can be smelled but the contents cannot be seen. For example it can be made with: a saltshaker, a mesh/metal tea ball, or a non transparent glass cover with aluminium foil with tiny holes or cotton gauze held in place by a rubber band.

Make sure the inside is cleaned well, and then add the proper food items following the criteria:

-fruit: a freshly cut piece, renewed often

-coffee: ground roasted coffee beans

-vanilla bean, or cinnamon stick: broken into pieces in the container

-onion or garlic: cut into pieces and interested into the container.

Re-close the container.

SMELL - Exercise 2

Get 3 small re-sealable containers. Assure that they have been cleaned well and then number them 1 through 3.

In each one insert (following the plan below) the different solutions of water and mint (or others).

For the solution of water and mint we suggest the following proportions.

Prepare a solution of 1 litre of water and 10 drops of peppermint extract.

Container 1:

150 ml of the solution.

Container 2:

150 ml of water plus 3 teaspoons of the solution.

Container 3:
150 ml of water plus 1 teaspoon of the solution.

TOUCH

TOUCH - Instructions to prepare Exercise 1

Construct the “magic boxes” starting with cardboard boxes of medium dimensions (30cm x 20cm x 20cm) and make hole through which is it possible to insert a hand. Attach with adhesive tap, glue or pin a piece of material that hides the view of the contents of the box.

Before you begin the exercise insert the objects into their boxes. In number 1 an apple. In box number 2, put a kiwi. In box number 3, insert a carrot.

Have the participants of the exercise insert their hand into the boxes and complete the worksheet. Naturally, the contents of the boxes could be substituted for other types of fruits and vegetables, or you can also use, spices, herbs and powdered foods like coffee or flour.

TOUCH - Instructions to prepare Exercise 2

Utilize the same “magic box” from Exercise 1 (see above). This time insert object of different consistencies. For example, rubber balls (elasticity) or play dough (plasticity).

HEARING

Hearing - Instruction to prepare Exercise 1

Sounds of cooking recorded and then played using an Ipod and headphones (or another method may be used). We recorded the following sounds: water boiling, something frying, a knife cutting, cracking an egg, a bottle being uncorked and a table being set.

POLYSENSORY

POLYSENSORY - Exercise 1

Get two containers/bottles with a minimum capacity of 1 litre and number them 1P and 2P.

Container/Glass 1P

Heat a litre of water to almost a boil, and add slowly a teaspoon of pectin, take care to mix it in slowly to prevent clumps from forming. Once mixed, add a teaspoon of tannic acid.

Container/Glass 2P

Add a teaspoon of tannic acid to a litre of water.

Alternative suggestions:

Polysensory - Identify the aromas: taste with and without the sense of smell.

You need two diverse varieties of the same fruit at the same stage of maturity and temperature (apple, pear, peach...). Taste the fruits with your nose plugged. Is it possible to distinguish the two fruits? Sniff the two samples. Is it possible to distinguish the two fruits using only your nose, without tasting? Try again to taste the sample, this time with your nose open.

TASTING

For the guided tasting we used three varieties of apples and three types of dark chocolate. If these varieties are not available you may substitute them for a product with similar characteristics. Instead of the “Grigia di Torriana” apple you can use Renetta or another local variety. In this case the profile of the apple (see page 17) may vary.

Instead of Domori chocolate you can use another type of artisan made chocolate. In this case the profile of chocolate (see page 18) may vary.

Each taster should receive a plate with a wedge or slice of each apple and a piece of each chocolate. The apples may oxidise as they wait after cutting for the next tasting, this is ok, DO NOT add any anti-oxidization agents such as lemon or acidic powders as these will alter the taste of the apples.



Notes



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Printed on recycled paper

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