

Sensory Analysis Laboratory

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SENSORY LABORATORY

Sensory analysis of fruit and vegetables are carried out in the laboratory:

- fresh
- processed: pastes, jams, juices, smoothies, concentrates, fermented
- stored



Projects completed and in progress

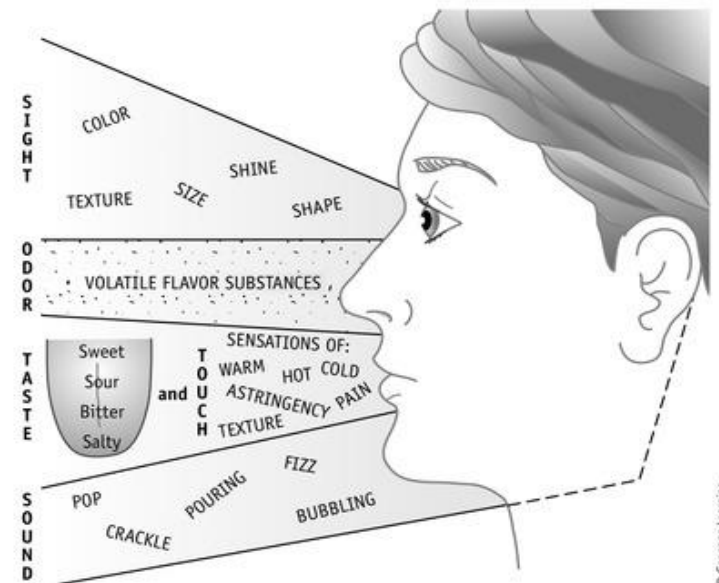
- TRICHODERMA „Polskie szczepy *Trichoderma* w ochronie roślin i zagospodarowaniu odpadów organicznych”, nr UDA-POIG.01.03.01-00-129/09-04.
- QUAFETY „Effects of hot water treatment on fresh-cut produce”, COST FA 1106 „An integrated systems approach to determine the developmental mechanisms controlling fleshy fruit quality in tomato and grapevine”,
- SUNNIVA “Sustainable food production through quality optimized raw material production and processing technologies for premium quality vegetable products and generated by-products”.
- BABY FOOD „Nowoczesne i innowacyjne produkty w ramach kategorii baby food”
- „PLANTLAB – innowacyjny system całorocznej produkcji sałaty rzymskiej oraz ryb słodkowodnych przy wykorzystaniu technologii aquaponicznej” współfinansowanego przez Unię Europejską z Europejskiego Funduszu Rozwoju Regionalnego w ramach Programu Operacyjnego Inteligentny Rozwój, nr umowy POIR.01.01.01-00-0579/19-00
- NORIS „Pilotażowa linia do produkcji przetworzonych grzybów uprawnych i leśnych o nowych cechach jakościowych”

Sensory Analysis

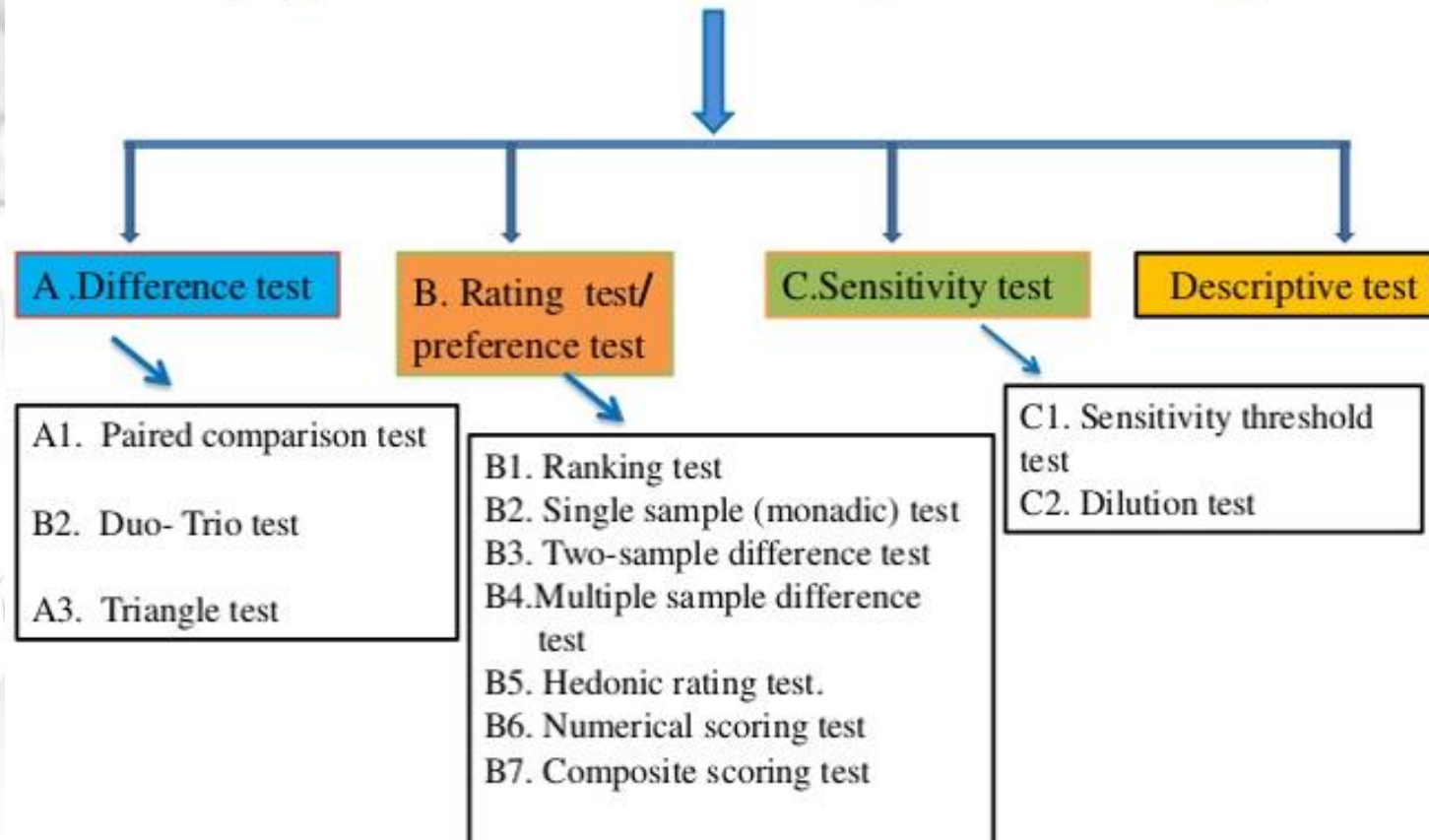
- Sensory analysis is the science of measuring and evaluating the properties of products using one or more senses constituting a measuring apparatus. While maintaining the appropriate measurement conditions and requirements for the sensory efficiency of the people carrying out the analysis, it enables a subjective assessment of the product quality.



FIGURE 1-1 Sensory impressions of food provided by the five senses.



Types of sensory testing



Modern method of sensory analysis

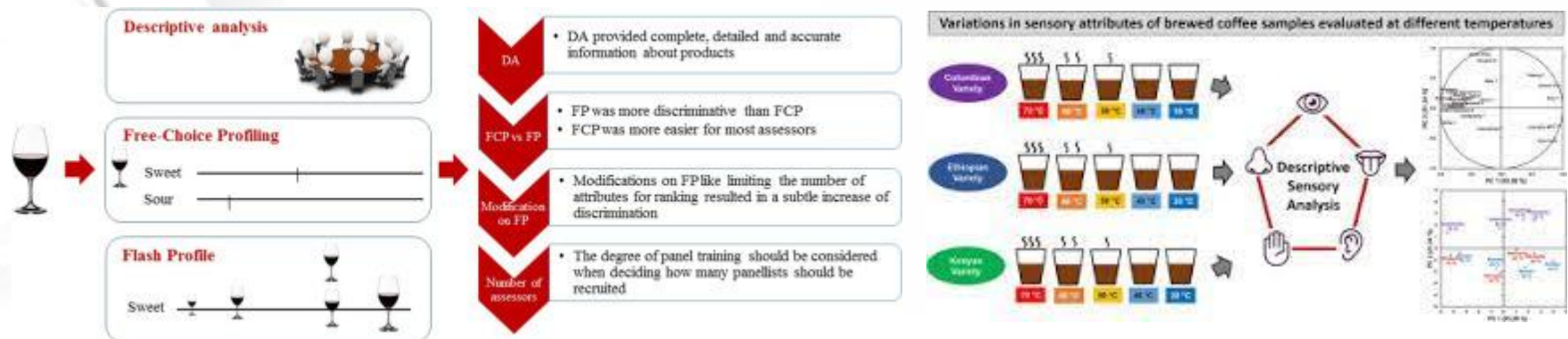
Dynamic methods of measuring impressions in time TI TDS

Free Choice Profiling (FCP), Flash Profiling

Napping method CATA method (Check-All-That-Apply)

Face Reading method

Eye Tracking method





SENSORY ANALYSIS

The subject of the analytical sensory test is

PRODUCT

and its objective sensory characteristics

Tests are carried out in specialized laboratories and under standard conditions, samples are assessed by a team of trained tasters.

OBJECTIVE EVALUATION



CONSUMER SENSORY EVALUATION

The subject of consumer evaluation is

CONSUMER

and his affective / hedonic reaction to the product

Research is conducted in laboratories, public places and at home. The raters are "average consumers" of > 30, 80-100, or more.

SUBJECTIVE EVALUATION

QDA - method

QDA (Quantitative Descriptive Analysis) is a descriptive method that represents one of the most advanced and comprehensive sensory methods. The main purpose of this method is to find the minimum number of terms that inform the maximum amount of information about the sensory properties of the product. In the profile analysis it is assumed that the flavour is not a single attribute of sensory quality, but a complex of many individual discriminants, separately assessed in terms of their quality and intensity.

The figure displays three charts related to QDA results:

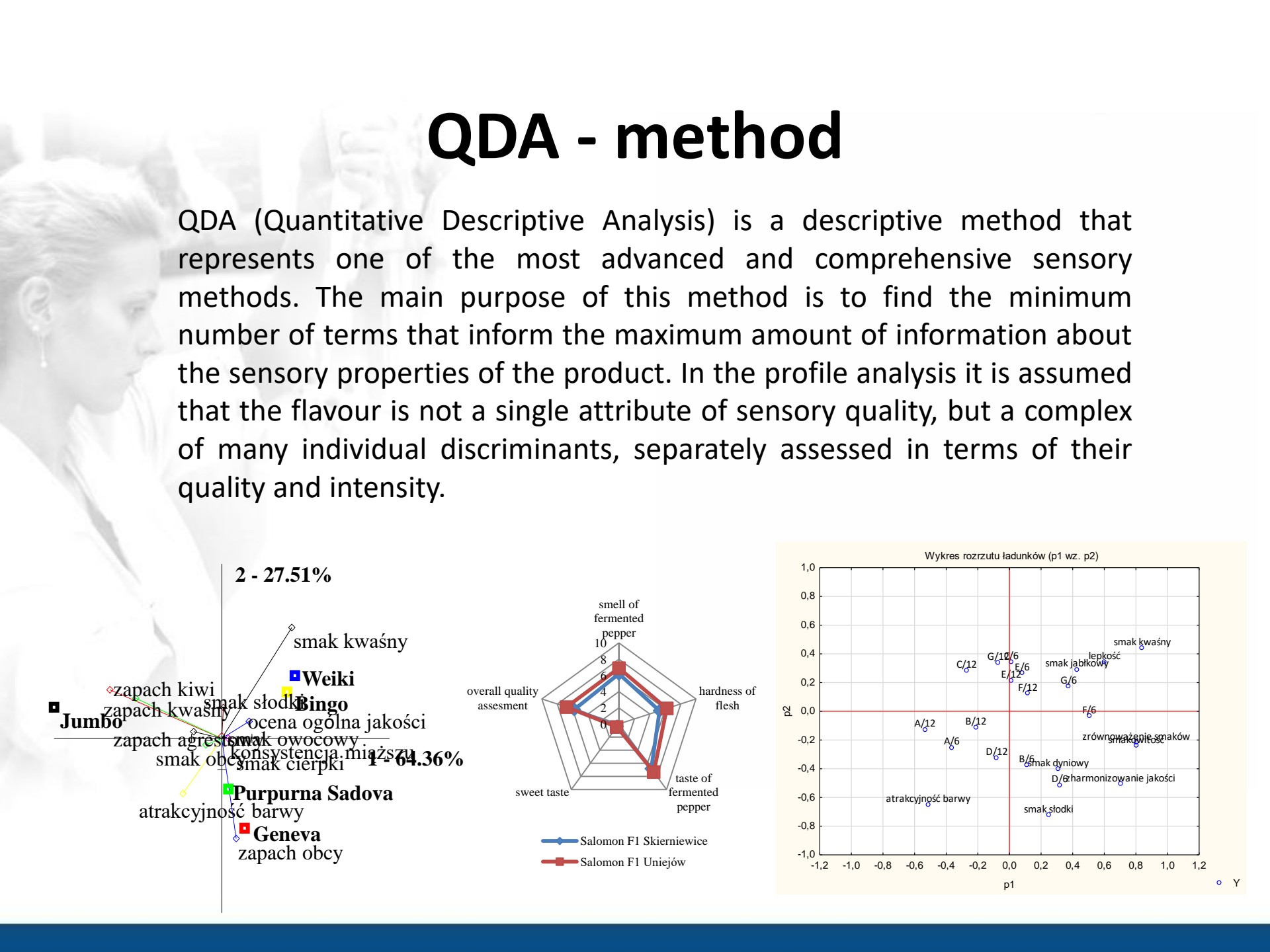
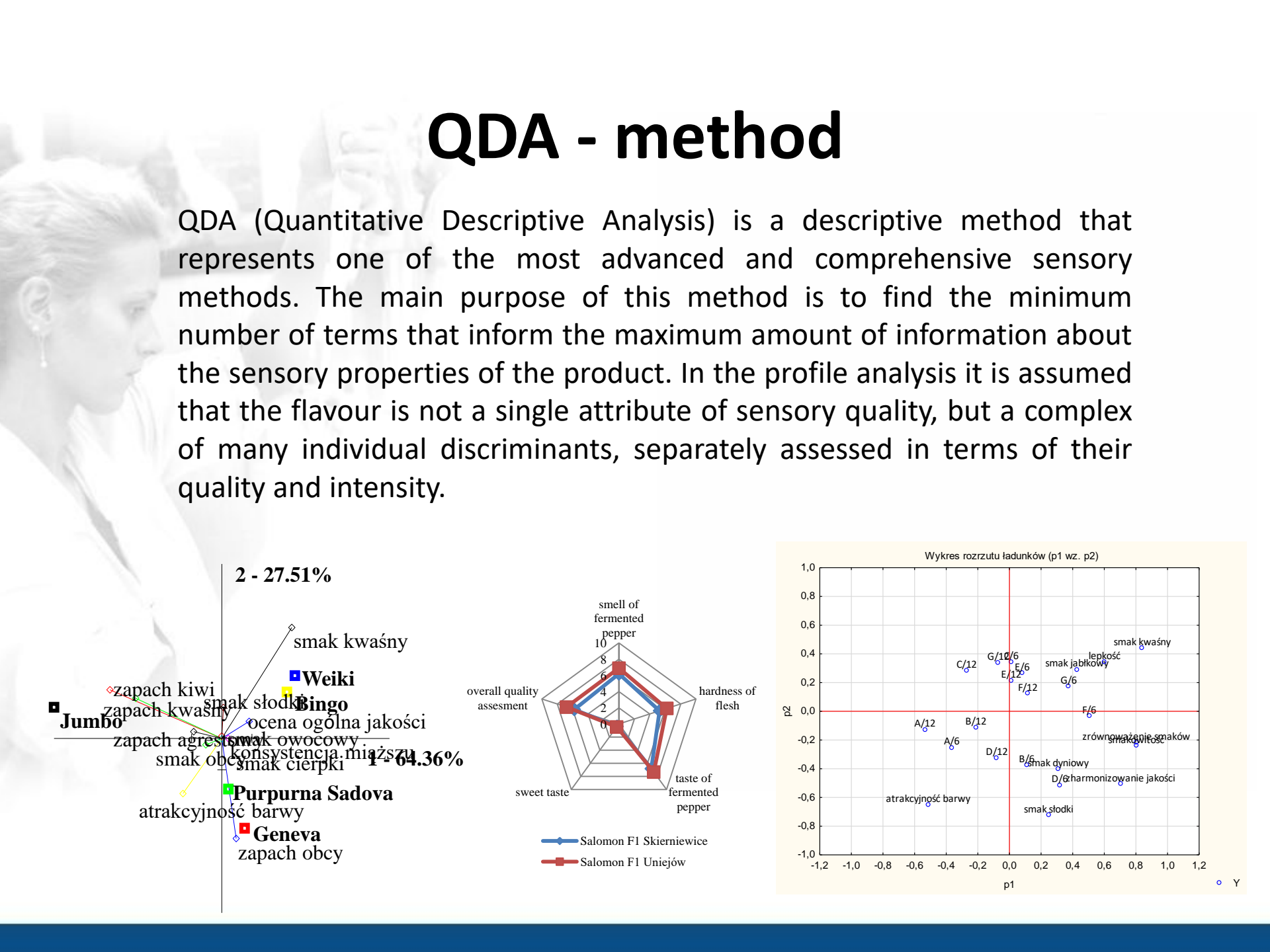
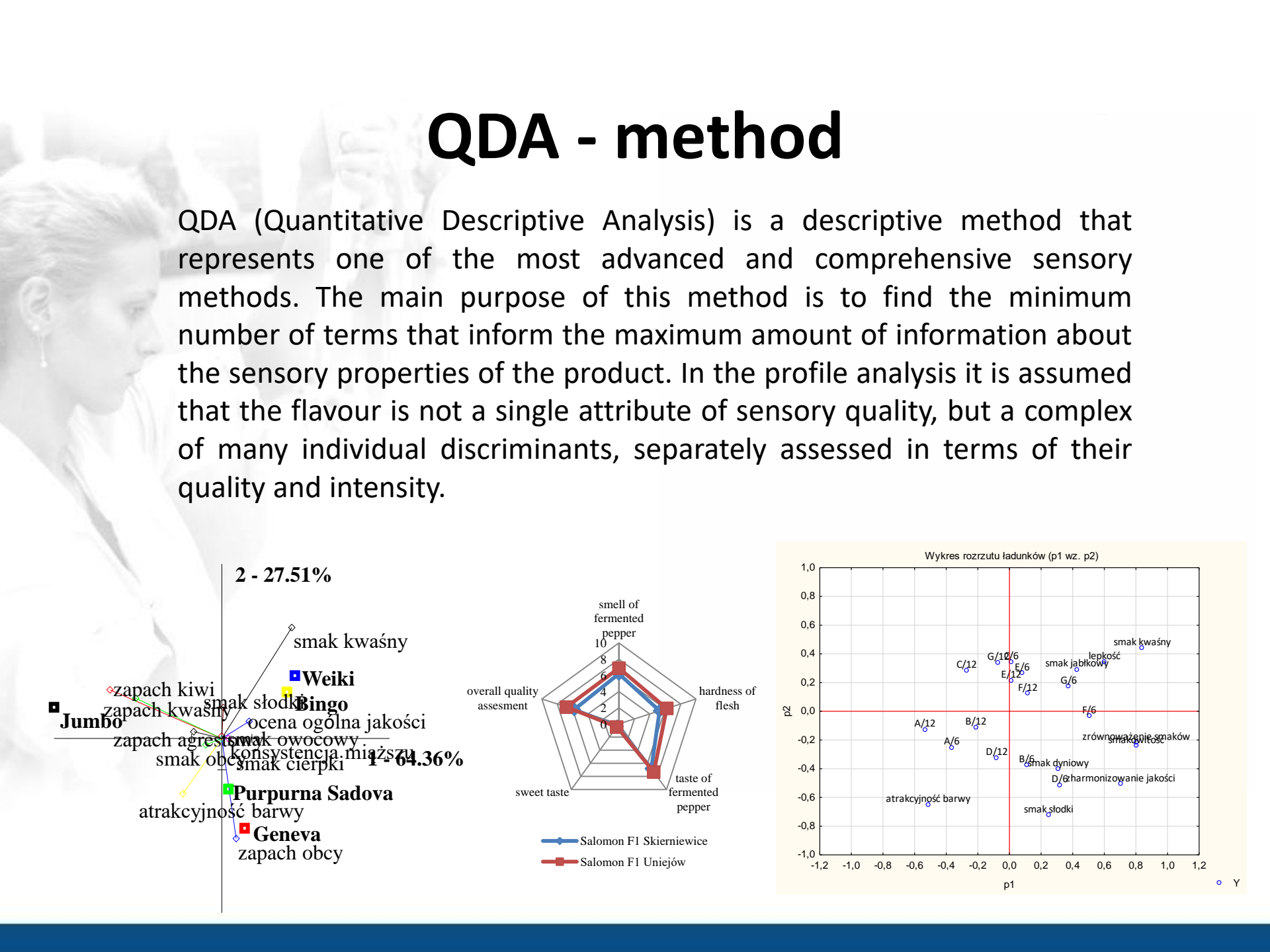
- PCA Plot (Left):** A scatter plot showing the first two principal components (p1 and p2). The x-axis is labeled "1 - 64.36%" and the y-axis is labeled "2 - 27.51%". Data points are labeled with product names: Jumbo, Weiki, Bingo, ocena ogólna jakości, smak owocowy, konsystencja mięsna, smak słodki, smak kwaśny, zapach kiwi, zapach kwaśny, zapach agrestu, smak obcy, smak cierpki, atrakcyjność barwy, and Geneva. The plot shows the relative positions of these products based on their sensory attributes.
- Radar Chart (Middle):** A radar chart comparing two products, Salomon F1 Skierniewice (blue line) and Salomon F1 Uniejów (red line), across five attributes: smell of fermented pepper, hardness of flesh, taste of fermented pepper, sweet taste, and overall quality assessment. The scale ranges from 0 to 10.
- Loadings Plot (Right):** A scatter plot titled "Wykres rozrzutu ładunków (p1 wz. p2)" showing the distribution of sensory attributes (loadings) on the first two principal components. The x-axis is labeled "p1" and the y-axis is labeled "p2". Attributes include: smak kwaśny, lepkość, smak jabłkowy, smak słodki, smak obcy, smak owocowy, smak cierpki, atrakcyjność barwy, harmonizowanie jakości, smak dyniowy, i smaki, zrównoważenie smaków, and zapach obcy.

QDA - method

QDA (Quantitative Descriptive Analysis) is a descriptive method that represents one of the most advanced and comprehensive sensory methods. The main purpose of this method is to find the minimum number of terms that inform the maximum amount of information about the sensory properties of the product. In the profile analysis it is assumed that the flavour is not a single attribute of sensory quality, but a complex of many individual discriminants, separately assessed in terms of their quality and intensity.

The figure displays three charts related to Quantitative Descriptive Analysis (QDA):

- PCA Biplot:** A scatter plot showing the relationship between samples and sensory attributes. The x-axis is labeled "1 - 64.36%" and the y-axis is labeled "2 - 27.51%". Samples are represented by colored squares: Jumbo (black), Weiki (blue), Bingo (yellow), Purpurna Sadova (green), and Geneva (red). Sensory attributes are represented by black diamonds, including "smak kwaśny", "zapach kiwi", "zapach kwaśny", "zapach agrestowy", "smak słodki", "ocena ogólna jakości", "smak owocowy", "konsystencja mięsna", "smak cierpki", "atrakcyjność barwy", and "zapach obcy".
- Radar Chart:** A five-axis chart comparing two samples: Salomon F1 Skierniewice (blue line with diamond markers) and Salomon F1 Uniejów (red line with square markers). The axes represent: "overall quality assessment", "sweet taste", "taste of fermented pepper", "hardness of flesh", and "smell of fermented pepper". The scale ranges from 0 to 10.
- Loading Plot:** A scatter plot titled "Wykres rozrzutu ładunków (p1 wz. p2)". The x-axis is labeled "p1" and the y-axis is labeled "p2". It shows the distribution of sensory attributes (e.g., "smak kwaśny", "lepkosć", "smak jabłkowy", "zrównoważenie smaków", "miętkość", "smak słodki", "harmonizowanie jakości", "smak dyniowy", "atrakcyjność barwy") relative to principal components p1 and p2.



TEA DESRIPTORS

1. The intensity of the infusion the smell of tea:

0 imperceptible - 10 very intense

2. Floral, sweet, fruity smell :

0 imperceptible - 10 very intense

3. Herbal smell:

0 imperceptible - 10 very intense

4. Off-smell:

0 imperceptible - 10 very intense

5. Clear appearance :

0 not very clear- 10 very clear

6. Colour:

0 light brown / straw - 10 very intense dark

7. Tea taste:

0 imperceptible - 10 very intense

8. Bitter taste :

0 imperceptible - 10 very intense

9. Sour taste:

0 imperceptible - 10 very intense

10. Astringent taste:

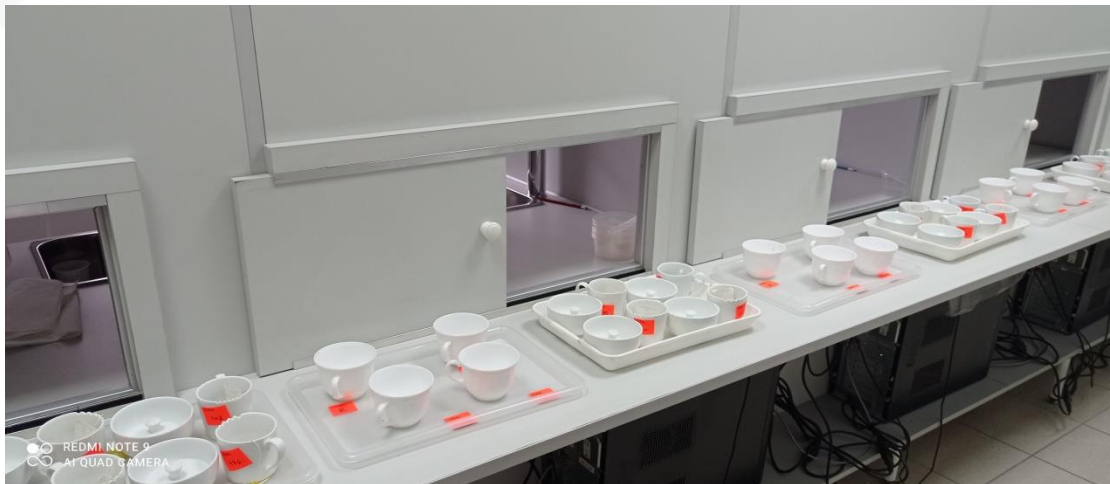
0 imperceptible - 10 very intense

11. Off-taste:

0 imperceptible - 10 very intense

12. Overall quality score:

0 bad - 10 very good



COFFEE DESCRIPTORS

1. Aroma flavor of coffee
2. Burnt coffee smell
3. Cocoa/chocolate smell
4. Earthy/dirty smell
5. Fruity smell
6. Nutty smell
7. Off-smell
8. Coffee impression
9. Color coffee
10. Viscosity
11. Taste flavor of coffee
12. Bitter taste
13. Sour taste
14. Astringent taste
15. Off-taste
16. Overall quality score

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 little brown intense – 10 very intense brown

0 low viscosity / density – 10 high viscosity / density)

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 imperceptible - 10 very intense

0 bad - 10 very good



Multiple comparison test

Task: You have a control sample marked K and three test samples marked with a three-digit code in front of you. Evaluate the control sample first and then the first test sample. Mark the noticeable difference between these samples on the scale below, putting an "X" in the appropriate place. Proceed in the same way with subsequent samples.

B1) Intensity of aroma tea

Code.....**T.321**.....

1	2	3	4	5	6	7	8	9
No difference	Very little difference	Slight difference	Little difference	Moderate difference	Greater difference	Big difference	Very big difference	Completely different

Code.....**T.332**.....

1	2	3	4	5	6	7	8	9
No difference	Very little difference	Slight difference	Little difference	Moderate difference	Greater difference	Big difference	Very big difference	Completely different

Code.....**T.343**.....

1	2	3	4	5	6	7	8	9
No difference	Very little difference	Slight difference	Little difference	Moderate difference	Greater difference	Big difference	Very big difference	Completely different

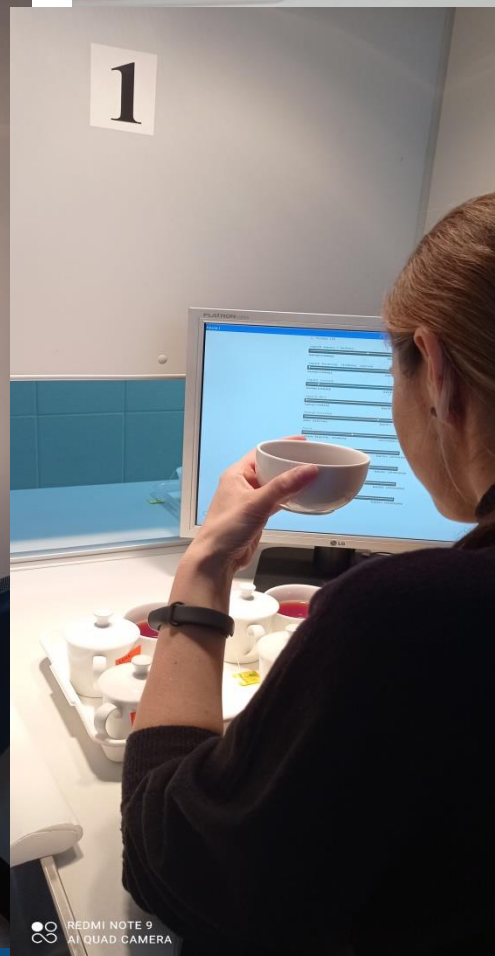
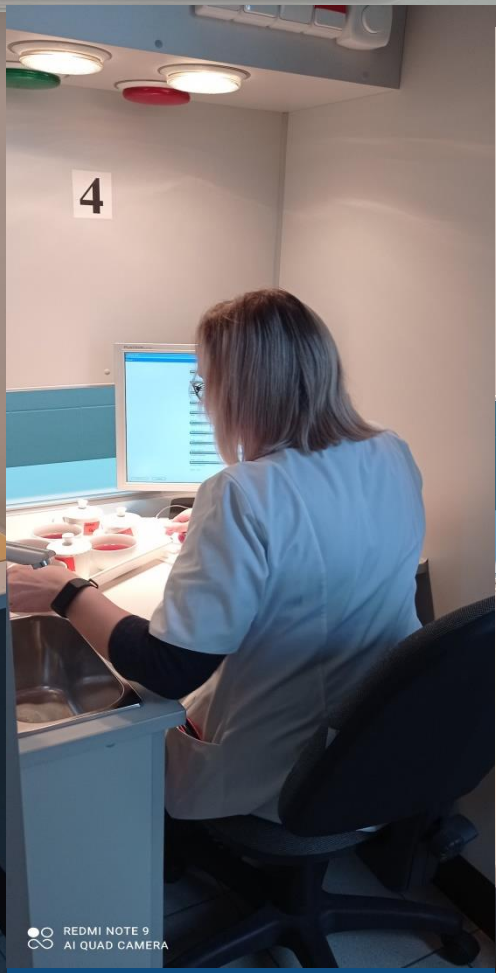
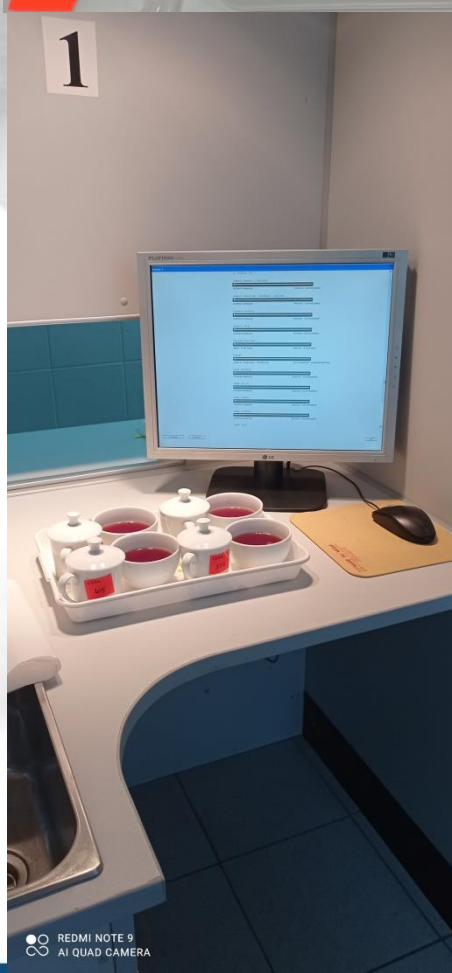


TEA CUP



TEA





COFFEE





www.inhort.pl



**THANK YOU
FOR ATTENTION!**