Study of the subjective affective meaning and motivational aspects towards extra virgin olive oil

By **Ella Pagliarini, Paolo Stramba Badiale*** and **Laura Semeria**

DISTAM, Sezione di Tecnologie Alimentari, Università di Milano, Via Celoria 2, 20133 Milan (Italy)

* Istituto di Psicologia, Facoltà di Medicina, Università di Milano, Via F. Sforza 23, Milan (Italy)

SUMMARY

Study of the subjective affective meaning and motivational aspects towards extra virgin olive oil.

The objective of this work was to explain the motivations influencing the consumer to purchase a particular extra virgin olive oil on the basis of its appearance parameters.

A procedure was set up according to Osgood´s semantic differential technique using a non-trained panel of 30 women.

Teh perceived profiles of oils showed that, in some cases, there is a correlation between the affective meaning of the subjects towards the descriptors of colour and transparence and the visual characteristics of the samples.

KEY-WORDS: Colour - Extra virgin olive oil - Semantic differential technique - Turbidity.

1. OBJECTIVE

This work aims to investigate the motivations influencing the consumer to purchase a particular extra virgin olive oil on the basis of its appearance characteristics.

2. METHODOLOGY

2.1. Panel

A non-trained panel composed of 30 women, aged between 20 and 55, traditional consumers of extra virgin olive oil, was used.

2.2. Samples

Consumers were asked to express their judgement on the visual characteristics (colour and turbidity) of 4 samples of extra virgin olive oil (table I).

Extra virgin olive oils, mixed to obtain suitable colour (yellow-green) and turbidity (limpid-turbid) formulations, were used.

In order to increase the turbidity of samples B and C, 500 µl of Tween 20 (Sigma SpA, Milan) and 100 µl of water were added to 500 ml of oil. The mixture was then shaked for 1 min at 3,000 rpm in Omnimixer 17106 (Sorvall, Newtown, USA).

Table I
Physical characteristics of the oil samples.

SAMPLES	TURBIDITY (NTU)	COLOR (YI)
A, Limpid Green	14.5	43.0
B, Turbid Green	75.6	52.8
C, Turbid Yellow	31.0	62.8
D, Limpid Yellow	11.7	71.5

2.3. Instrumental assessment of colour

The colour of each oil sample was determined using a colorimeter (Chromameter II Reflectance, Minolta Camera Co., Ltd, Japan). A white tile no. 101947 was used to standardize the instrument.

Thirty ml of oil were poured into a glass capsule with a thick layer of black teflon wrapped around the side to produce an opaque reflective surface. The colorimeter measured the values L, a and b of the CIELAB colour difference equation developed from the Hunter system (Francis and Clydesdale, 1975) (1). Five replicates were carried out for each sample. The Yellow Index (YI) was calculated as:

$$YI = \frac{142.86}{L} b$$

2.4. Instrumental assessment of turbidity

Sample turbidity was measured by means of a Hach turbidimeter (mod. Ratio-Turbidimeter 18910, Hach Europe SA Namur, Belgium), previously calibrated using a formazine solution and expressed as NTU (Nephelometric Turbidity Units). Five replicates were carried out for each sample.

2.5. Sensory test

The affective meaning of the subjects towards extra virgin olive oil was evaluated as follows: 30 ml of oil was poured into a glass testtube, which was placed into a

cube-shaped wodden box (32.5x32.5 cm). Each box was equipped with a sliding cover to introduce the test-tubes containing the samples, a switch placed on the outer side to turn on a halogen lamp Halo Star 250 Watt, 220 Volt, 2900 K and a rectangular opening (1.8x5.5 cm), as shown in figure 1.

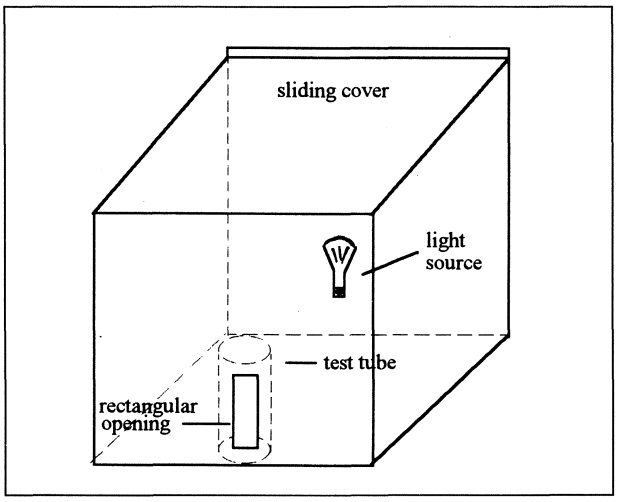

Figure 1
Schematic representation of the box for the sensory evaluation.

The test-tubes were introduced in such a way that the opening was covered and no detail of glass edges and cap was visible. Thus, each test-tube could not be identified as it was placed exactly between the opening and the lamp. The subjects sat in front of one box. A card, set up according to Osgood's (2) semantic differential technique was then presented to the subjects (figure 2).

The subjects examined the 4 extra virgin olive oil samples successively and filled in the card.

3. RESULTS AND DISCUSSION

The profiles reported in figure 3 show that a correlation between the affective meaning of the subjects towards the descriptors of colour and transparence and the visual characteristics of the extra virgin olive oil samples can only be found in some cases.

Considering the clusters of close descriptors for transparent/opaque, radiant/shadowy and yellow/green, a good correlation is observed for 'limpid yellow', 'turbid green' and 'turbid yellow' oil samples. The 'limpid green' sample is perceived as 'opaque' rather than 'transparent'.

Generally speaking, all oil samples are perceived by the subjects on the positive descriptor side.

Considering some of the suggested descriptors, it can be noticed that the subjects tend to make significant connotative choices. The highest degree of turbidity and green colour is well fitted with the following descriptors: 'for dressing', 'rich', 'desirable', 'expensive', 'fresh', 'genuine'. The intensity of these connotations decreases with decrease

We will show you four extra virgin olive oil samples separately. Please, fill in, for each sample, the card that you have received.

Some descriptors, selected among those describing your affective meaning towards the oil samples, are listed on each card. As you see, these descriptors, which are contrasting, are placed at the right and left side of a line. The line represents an intensity scale of your affective meaning.

After looking at each sample, mark ad lib the intensity of your affective meaning on the line without thinking too long about it.

For instance, if, after examining one of the samples, you 'feel' that what you have seen is 'good' rather than 'bad', write the symbol closer to the term 'good' according to the intensity of your affective meaning. Neutral judgements are allowed.

Name and Surname:
Date:
Age:
Education:
Observations:

GOOD	BAD
GENUINE	ARTIFICIAL
TRANSPARENT	OPAQUE
FRESH	AGED
EXPENSIVE	INEXPENSIVE
DESIRABLE	UNDESIRABLE
HOT	COLD
MODERN	ANCIENT
FOR CHILDREN	FOR ADULTS
STROGN	WEAK
RICH	POOR
MALE	FEMALE
NOURISHING	NON-NOURISHING
SWEET	BITTER
HEALTHY	UNHEALTHY
FOR COOKING	FOR DRESSING
YOUNG	OLD
RADIANT	SHADOWY
YELLOW	GREEN

Figure 2
Psychosensory test card

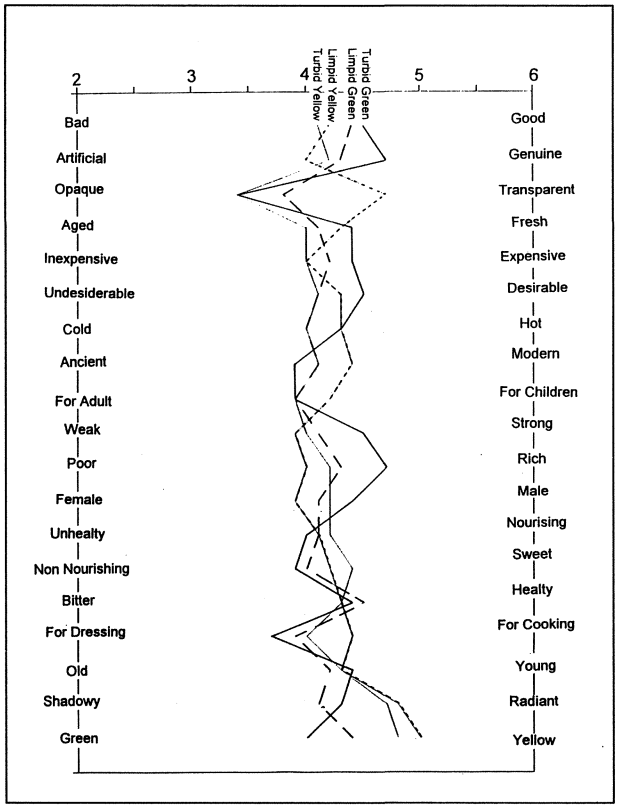

Figure 3
Perceived profile of the 4 oil samples

of the 'turbidity' gradient of the oil samples. This suggests that oil with intense turbidity and green colour characteristics is positively perceived in terms of 'richness', 'strength', 'genuinity' and 'desirability'.

The descriptors 'for dressing/for cooking' indicate the following two extremes, respectively correlated: 'turbid green' and 'limpid yellow'. This result indicates that the subjects are positively oriented towards the visual characteristics of 'turbid green' oil.

Interesting results were obtained for the descriptors 'male/female' and 'modern/ancient'. Data show that only the 'limpid yellow' oil sample is positively defined towards the descriptor 'female'.

This suggests that the affective meaning of oil 'maleness' increases on increasing the gradient of turbidity and green colour. Therefore, a turbid, green oil is considered mainly a 'virile' and 'strong' food. It is also considered 'modern' rather than 'ancient', i.e. a food with an intrinsic 'desirability' that is not subject to large changes in people's taste.

Finally, the result obtained for the descriptors 'for children/for adults' is very interesting. The subjects perceived only the 'limpid yellow' oil sample as 'for children'.

REFERENCES

1. Francis, F. J., Clydesdale, F. H., 1975, Food Colorimetry: Theory and Application, AVI, Publishing Co. Westport, CT.
2. Osgood, C. E., 1964. Semantic Differential Technique in the Comparative Study of Cultures, American Anthropologist, 66: 171-200.