

## USING OF LAVENDER EXTRACTS AND PLANTS IN VEGETABLE OILS AND CONFECTIONERY PRODUCTS

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### Abstract

The present paper was focused on the investigation of using lavender, essential oil or plant, as a flavouring for sunflower and olive oils on one hand and on its use in a special innovative cake on the other hand. The sensory evaluation of the vegetable oils was made using sensorial analysis and it was concluded that in the case of sunflower oil, the flavour was better when using essential oil lavender extract; in case of olive oil, there was an incongruity of tastes and aroma (both of them being too strong). The cake analysis was done by a special jury during a student contest and received 34,6 points of 40 maximum and obtaining the second place.

**Key words:** confectionery, essential oils, lavender extract

### INTRODUCTION

The extensive use of essential oils dates since antiquity; precious perfumes were found in many of the archaeological sites, as a symbol of wealth and social position.

The essential oils international trade dates since the middle of the fortieth century, when the first perfume was created for Hungarian Queen Elisabeth; at the beginning of the eighteenth century, the l'eau de cologne was created (it was based on bergamot and citrus essences, the most used even now).

The essential oils are oily liquids extracted from different plants parts: flowers (jasmine, roses, violets, lavender), germs (pimento), leaves (eucalyptus, sage), fruits (anise), branches, husks (cinnamon), wood (sandal wood), roots (ginger). Oil extraction is done by different methods, based on their hydrophobic proprieties. The extraction yields are reduced, so the final products are very expensive [1].

The essential oils obtained by fresh lavender flowers distillation are extensively used in perfume industry, cosmetics, pharmaceutical industry and aromatherapy. Dehydrated flowers are used in tea formulas because of their relaxing action on the central

nervous system, or due to the antiseptic, skin healing, diuretic response.

As a result, these oils are used in migraines, headaches, cardiovascular and digestive relief [4].

Food oils and aromatic plants are an ideal pair for salads, pasta, fish products, seafood, meat and legume seasoning.

If added in vegetable oils for salads or dressings, essential oil can be easier dispersed into the food products so the flavour and aroma will be better scented by the consumer [2].

### MATERIALS AND METHODS

#### *Oil flavouring with lavender*

In this paper we intended to investigate if sunflower oil (the most used vegetable oil) or olive oil (with a slight tinge of bitterness) are sensory improved by flavouring with lavender (plant or essential oil).

The sunflower and olive oils were purchased from the supermarket; the lavender plants and essential oils were purchased from Plafar.

We have introduced 100mL oil (sunflower or olive) in small recipients and added 3 twigs of fresh lavender. In parallel, we have flavoured the 100mL oils with 2 drops of essential oils. All samples were stored at dark for 3 months and sensorial evaluation were conducted each 30 days of storage.

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### *Sensory evaluation of flavoured oils*

The sensorial panel representatives were 35 students of the Animal Science Faculty, Food Technology and Processing department.

Accordingly to the standard procedure, tasters have evaluated the control (not flavoured) or flavoured sunflower and olive oils (with lavender plants and essential oils). They have investigated the following sensory attributes: taste, flavour, limpidity, colour and aspect [3].

### *Obtaining of an innovative confectionery product flavoured with lavender*

In order to obtain "Vernisage" cake, raw materials from SC ZINNIA Distribution were used.

For cookie dough were used: Irca Brownie Choc, water, butter, oil, pasta Frutta Portocala. For the cream: Reno Bianco, liquid and half made whipped cream, water, Lilly yogurt, fatted yogurt 10% fats, lavender oil.

Cookie dough: Irca Brownies were homogenised with cold water, then tempered butter and oil were added. The composition

was cooked at 175°C for 32 minutes, then cooled for a better creaming of the surface.

For the cream: the white chocolate was tempered at 45°C and then mixed with liquid whipped cream. Lilly Yogurt was mixed with the cold water, half-made whipped cream and the yogurt. The two components are mixed together, then precise flavoured with essential lavender oil.

## RESULTS AND DISCUSSIONS

### *Sensory evaluation of flavoured oils*

The purpose of using plants or the essential oil in products flavouring was to determine which kind of procedure is more appropriate for the flavouring, so after the sensorial analysis of both sunflower and olive oil to make recommendations on procedure and consumption.

In Figures 1 and 2 it can be observed the analysed samples: sunflower/ olive oil - control and flavoured (with lavender plants or essential oil).

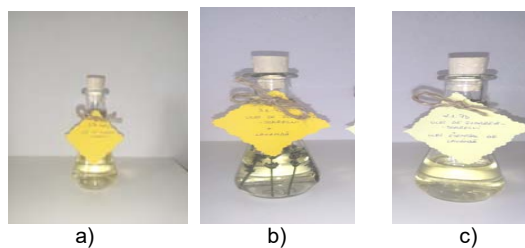


Fig. 1 Sunflower oil: a) control sample (non-flavoured), b) flavoured with lavender plant, c) flavoured with lavender essential oil

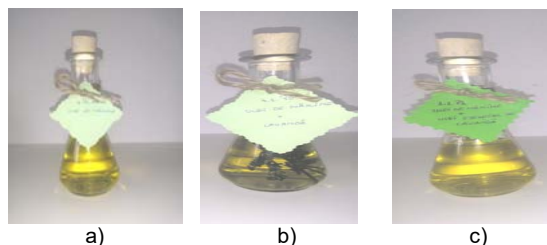


Fig. 2 Olive oil: a) control sample (non-flavoured), b) flavoured with lavender plant, c) flavoured with lavender essential oil

In order to see the influence of the product presentation type (plant or essential oil) on the final aroma of flavoured oils, the results are presented on two charts: one for

the grades of sunflower oil flavoured with lavender plants (Figure 3a) and the other for the sunflower oil flavoured with lavender essential oil (Figure 3b).

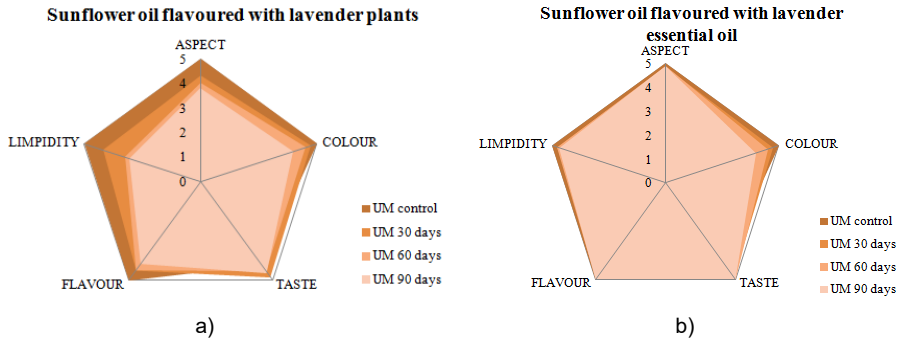


Fig. 3 Sensory evaluation of lavender flavoured sunflower oil: a) with lavender plant; b) with lavender essential oil

The same representation was made for olive oil flavouring: with lavender plants (figure 4a) and lavender essential oil (Figure 4b).

The sensory analysis of sunflower oil flavoured with lavender essential oil shown better results than that with lavender plant.

However, we need to be very careful because the lavender essential oil has a very strong aroma and a slight over adding can strongly change the acceptance of the final flavoured product.

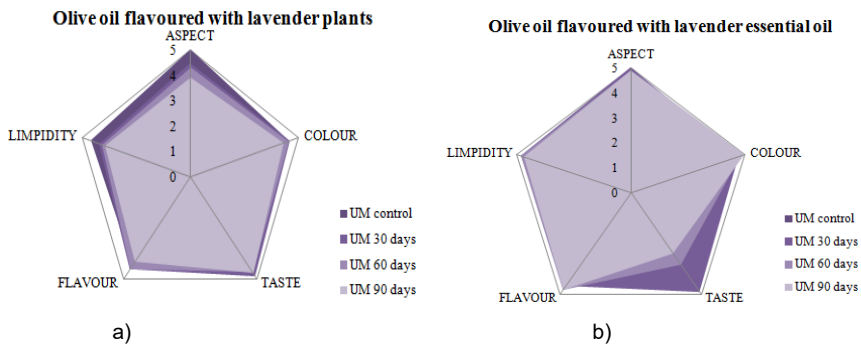


Fig. 4 Sensory evaluation of lavender flavoured olive oil a) with lavender plant; b) with lavender essential oil

The main problem of olive oil is its bitterness and astringent taste, which made it quite strong and unpleasant despite its obvious nutritional proprieties.

We thought that by flavouring the olive oil with lavender essential oil we might obtain an improvement of these taste disadvantages.

Figure 4b shows that the aroma and flavour of the olive oil was not so appreciated

by the tasters because of the strong aroma (despite the reduced dose of the oil).

However, the olive oil flavoured with the lavender plant shown a better aroma, taste and colour (although was less appreciated as limpidity and aspect).

*Obtaining of an innovative confectionery product flavoured with lavender*

The net cost of the "Vernisage" cake has been calculated at 5.24 lei / portion and is detailed in Table 1.

Table 1 The effective cost of the "Vernisage" cake

No.	Raw material	UM	Amount	Cost /UM (lei)	Final cost (lei)
	<b>BLAT BROWNIE</b>				
1	Irca Brownie Choc	kg	1	18.97	18.97
2	Water	ml	0.300		0.00
3	Butter	kg	0.150	23.50	3.53
4	Oil	ml	0.150	5.00	0.75
5	Pasta frutata portocala	kg	0.015	23.00	0.35
	<b>CREAM</b>				
6	Reno Bianco	kg	0.600	27.20	16.32
7	Liquid whipped cream	kg	0.300	12.00	3.60
8	Half-prepared whipped cream	kg	0.350	14.50	5.08
9	Water	ml	0.100		0.00
10	Lilly yogurt	kg	0.100	27.54	2.75
11	Fatty yogurt, 10% fat	kg	0.350	3.00	1.05
12	Lavender oil	ml	0.01	8.00	0.1
	<b>Final product quantity (pieces / kg)</b>		12		
	<b>Total raw material (RM) no VAT</b>				52.40
	<b>Total RM no VAT / portion</b>				<b>4.37</b>
	<b>Cost / portion (with VAT)</b>				<b>5,24</b>

#### *Sensory analysis of the cake*

In this case, for the sensory evaluation we have used the experience and skills of experts in the field of confectionery, food industry and teaching: Elena IONETE, executive director of Anamob, member of the tasting commission of Gastropan 2015; Cristina VAN DER SCHAAF, founder of Horeca School and President of Horeca NGO; Dr. ing. Gabriela BERECHET, food industry specialist; prof. Angela MĂNĂILESCU, author of curricula and school textbooks, professor at the Economic College, Bucharest and Petrișor TĂNASE maestro in culinary art, general secretary of the National

Association of chefs and confectioners, member of Euro Toques International. They have evaluated certain sensorial characteristics (specific to cakes): exterior / in section aspect, colour combining harmony, cream and filling quality, dough quality, ornament quality, taste, aroma, recipe originality (Figure 5).

During the experiment, the cake was improved: first, the essential lavender oil aroma was too much, then the general presentation and ornament was changed. At the final presentation (contest day), the jury appreciated the "Vernisage" cake with 34.7 points (of total 40).



Fig. 5 Lavender "Vernisage" cake at the final presentation

## CONCLUSIONS

1. Aromatic plants are grown especially for their effects in aromatherapy but also for their several health benefits. These effects are investigated on in vitro (on animals) and clinical studies. Some of the effects (relaxing and arterial pressure reducing) are certainty, other need more discussions and research.

2. Some essential oils can be used for vegetable oils flavouring in order to obtain dressings for legume salads, pasta, pizza, fish, seafoods and a lot of other foods.

3. Sunflower oil flavouring with lavender is a good way to achieve easy to use and dose dressings and to improve the sensorial characteristics of this common vegetable oil.

4. Olive oil flavouring with lavender (essential oil or plant) is not recommended due to an incongruity of tastes and aromas.

5. Using of the lavender essential oil into a cake obtained by a group of students, as part of an innovation contest was a success; "Vernisage" cake reached the second prize of the category contest, with 34.7 points of 40 total.

6. "Vernisage" cake will be promoted to confectionery stores and hope it will be baked intensively for the consumers delight.

## ACKNOWLEDGEMENTS

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