

# SENSORIAL EVALUATION OF NEW DEVELOPED BISCUITS ENRICHED WITH ORGANIC APPLE AND BASIL POWDERS: PRELIMINARY STUDY

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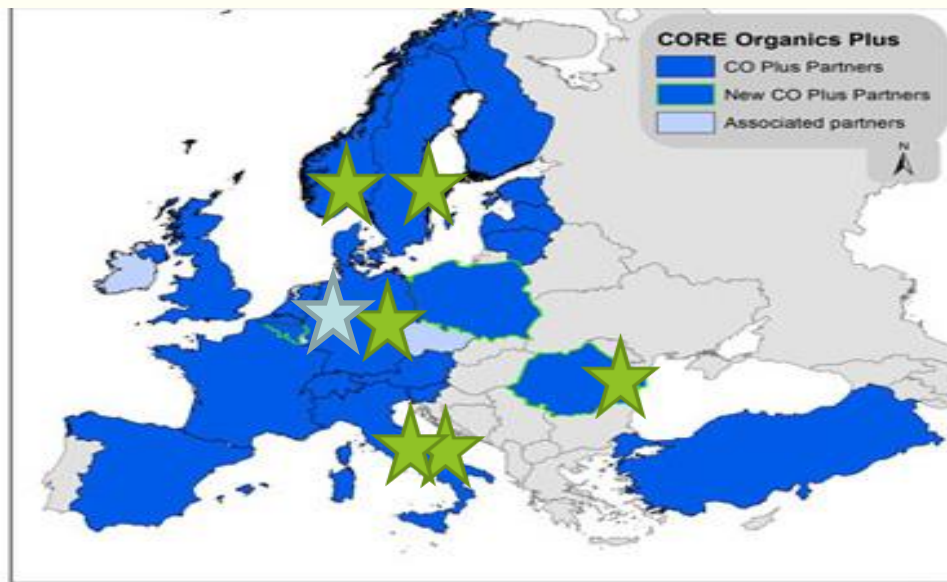


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# SusOrgPlus – transnational European project

## Intelligent food processing chains, natural additives and colourants



<https://www.susorgplus.eu/>

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# INTRODUCTION

- Organic farming represents the most important alternative to intensive farming, because of its role to protect health and well-being of current and future generations and the environment.
- Through the development of intelligent drying processes of food, could be obtain, using raw materials from organic agriculture, high nutritional value ingredients, which can be used as natural additives
- The collaboration between food technologist and additive producers is necessary for the optimization and development of networks and technologies, meeting the demands and high expectations of consumers

# WHAT WE PROPOSE...

- The organic ingredients used were obtained at the Research Center for Studies of Food Quality and Agricultural Products from USAMV Bucharest, within the SusOrgPlus project: Intelligent food processing chains, natural additives and colourants, which aims to develop advanced processing technologies for organic products and by-products.
- The aim of the study is to use of these organic ingredients in a new biscuit recipe, the qualitative and sensory evaluation of the obtained products; and the analysis of the degree of consumer acceptance for the organic food products enriched with food additives and natural dyes.

- Materials used in our study included:



- **lyophilized organic apple (pieces and powder)** - is obtained from apples, organic Gala variety, which was dehydrated by the lyophilisation process. Apple powder it is an important source of polyphenols with high antioxidant capacity.



- **lyophilized organic basil powder** - retains the characteristics intense colour and flavour. Lyophilised basil powder is aromatic, slightly sweet, with spicy notes in taste.

- The organic apples and basil powders were obtained within the SusOrgPlus project at the Research Center for Studies on Food and Agricultural Products Quality, from USAMV Bucharest.

- Research activity
  - Recipes development and organic food products made
  - Sensorial evaluation
  - Nutrient Content



## ***RECIPE DEVELOPMENT***

# ***OBTAINING ECOLOGICAL PRODUCTS***



# RECIPE DEVELOPMENT

- The technology of obtaining the products has been adapted according to the behaviour of the food additives and the natural organic dyes that are the object of the study.
- Materials used in our study included:
  - lyophilized organic apple (pieces and powder);
  - lyophilized organic basil powder;
  - hemp flour and husked hemp seeds.
- All ingredients was purchased from retail specialty stores with organic products.

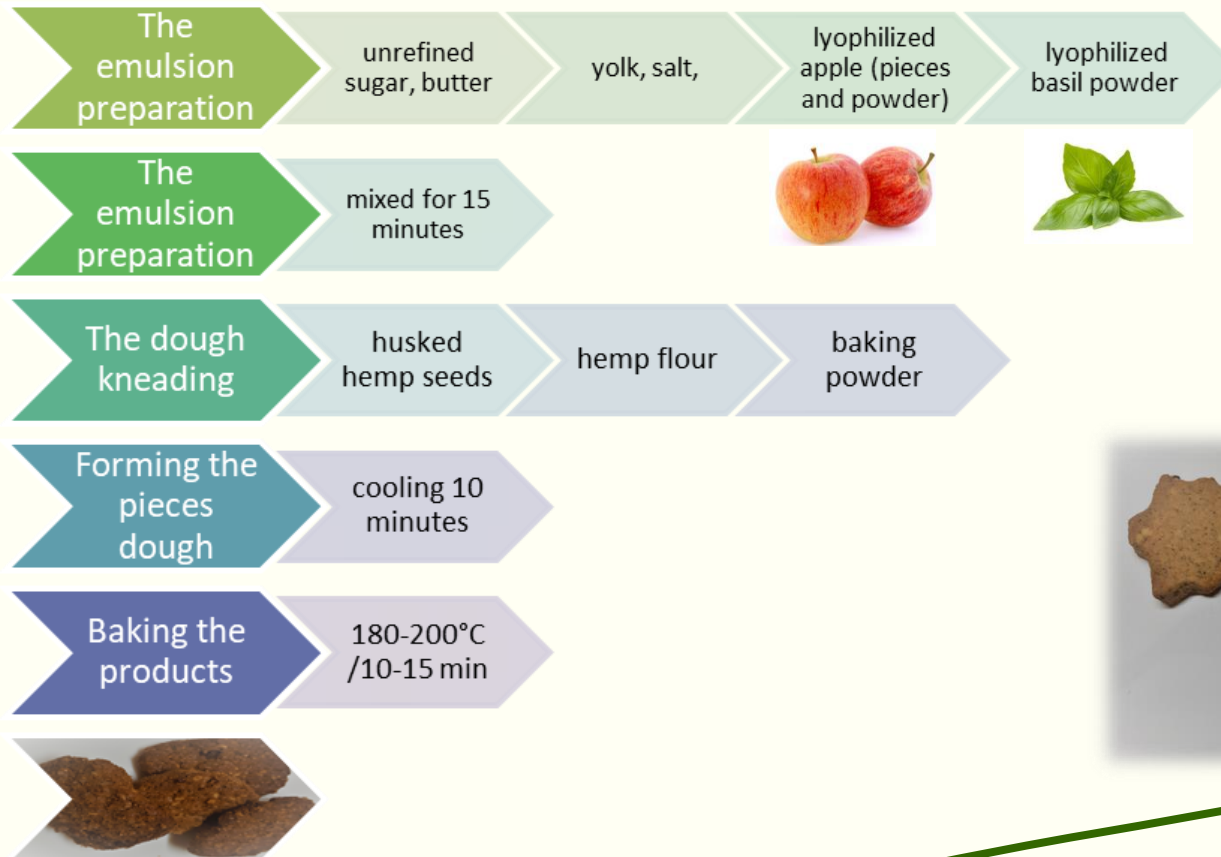
*Organic apple and basil powders, which were realized in the framework of the SusOrgPlus project at the Research Centre for Studies of Food Quality and Agricultural Products, from USAMV Bucharest.*

*The product was made in the Bakery Pilot Station of the Faculty of Animal Productions Engineering and Management, from USAMV Bucharest, within the SusOrgPlus project support.*



- Biscuits enriched with organic apple powder and basil powders;
- *Ingredients:* butter, wheat flour, unrefined brown sugar, hemp protein flour, husked hemp seeds, yolk, salt, baking powder, 0,5% lyophilized apple pieces and 0,15% lyophilized apple powder, and 0,1% lyophilized basil powder.
- It was obtained, a healthy organic biscuit, with specific sensorial characteristics, and with high nutritive value.
- The product was made in the Bakery Pilot Station of the Faculty of Animal Productions Engineering and Management, from USAMV Bucharest, within the SusOrgPlus project support.

# BISCUITS ENRICHED WITH ORGANIC APPLE POWDER AND BASIL POWDERS



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# BISCUITS ENRICHED WITH ORGANIC APPLE POWDER AND BASIL POWDERS

## Sensorial aspects

- very soft, they are very fragile, delicates and extremely tasty, have a pleasant taste of walnut and coffee.
- the aromatic notes specific to the introduced basil, which highlighted the product from anonymity, also observed a balanced taste of sweet-aromatic-slightly sour acid specific to dehydrated apple, introduced in two forms: small pieces and powder.
- hemp flour biscuits have a less appealing appearance and a darker colour due to the use of hemp flour which has changed the overall appearance of the finished product. These aspects can be corrected by covering the biscuits, with organic dark chocolate or another ingredients.



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CENTRUL DE CERCETARE PENTRU STUDIUL  
CALITATII PRODUSELOR AGROALIMENTARE

# THE INFLUENCE OF ORGANIC POWDERS IN THE NEW PREPARATION

- The influence of organic powders in the new preparation:



- ***lyophilized organic apple (pieces and powder)*** - is obtained from apples, organic Gala variety, which was dehydrated by the lyophilisation process. Apple powder it is an important source of polyphenols with high antioxidant capacity. Its presence in the recipe, balances the taste and aroma of the finished product, and the pieces of lyophilized apple give a pleasant texture and aroma to the product.
- ***lyophilized organic basil powder*** - retains the characteristics intense colour and flavour. Lyophilised basil powder is aromatic, slightly sweet, with spicy notes in taste. Because, it has a great capacity to rehydrate in the presence of water from the dough, the original character, such as the taste, colour and aroma specific to the basil, is present in the new preparation. Added the powder from the lyophilized basil aromatizes to the dough balances the taste and increases the preservation of final product.
- ***Husked hemp seeds and hemp flour*** are added for texture, taste, colour, high protein and fiber content, as well as high nutritional value.



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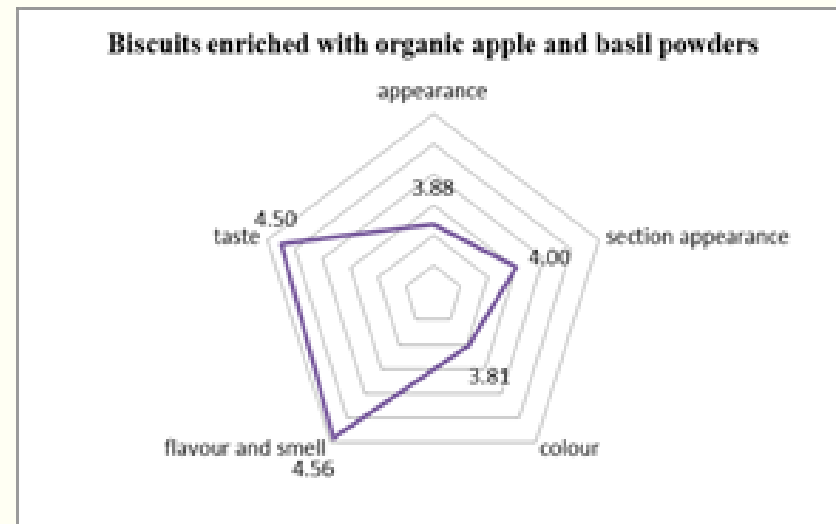


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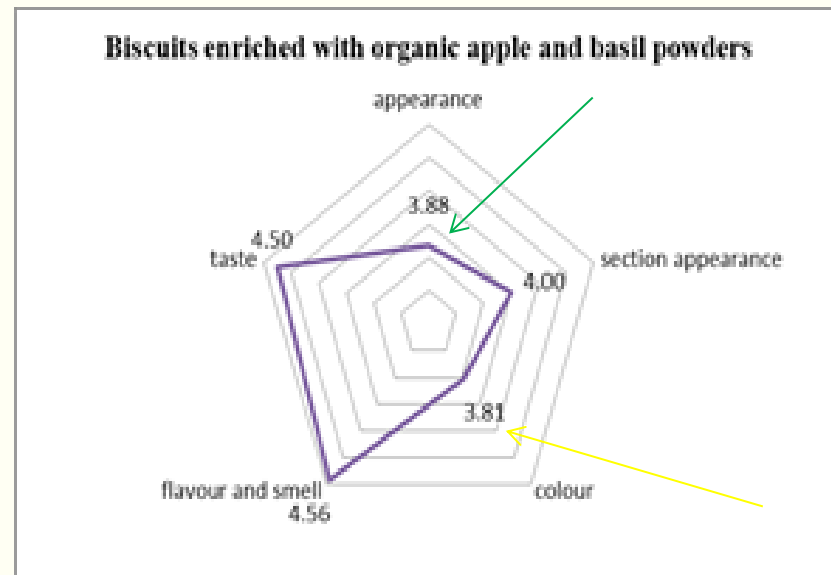


- *Objective:* to determine the level of acceptance of biscuits enriched with organic apple and basil powders.
- *Sensorial evaluation:* five-point Hedonic Scale with corresponding descriptive terms ranging from 5 'like extremely' to 1 'dislike extremely'.
- *First Panel group:* 33 members, of different ages,
- The panel members were requested to measure the terms identifying sensorial characteristics and to use the score.
- The sensorial tests of the biscuits were made considering: first appearance, section appearance, colour, flavour and smell, and overall taste of the sample.



Consumer acceptability scores on a 5-point Hedonic scale for biscuits

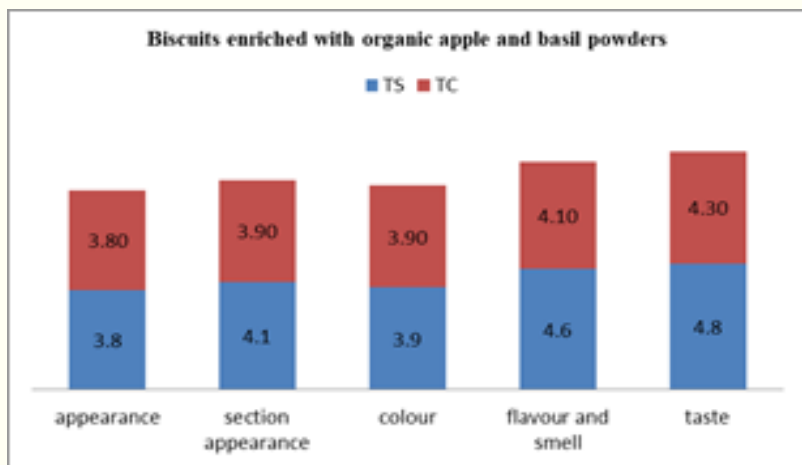
- Hemp flour biscuits did not receive a little score for color (3.81) and appearance (3.88), because the use of hemp flour changed the overall appearance of the finished product.
- These aspects can be corrected by covering the cookies with dark chocolate or other glazes and decorations.
- The product has been accepted by the consumers very easily, and the weighted average grade of 4.12 can be modified very easily by printing a new shape of the product or by decorating with chocolate or something else.



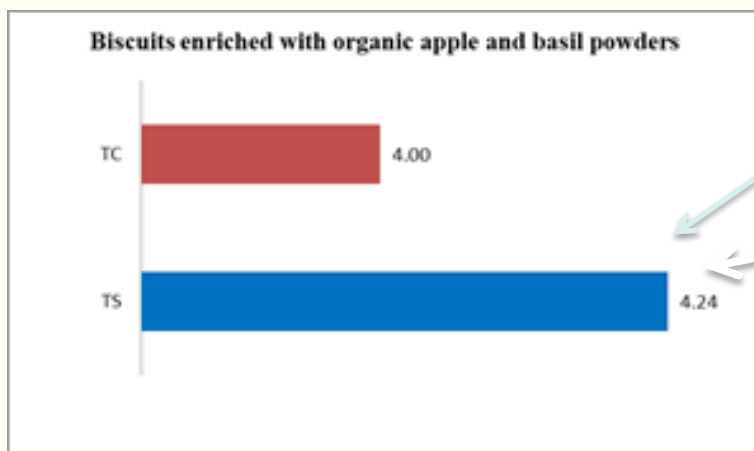
- *Objective:* to determine the level of acceptance of biscuits enriched with organic apple and basil powders;
- *Second panel group:* 10 trained evaluators;
- Application: two formulas were tested in pairs:
  - TC - test control (simple biscuit recipe)
  - TS - test sample (biscuits enriched with organic apple powder and organic basil powder obtained in the SusOrgPlus project)
- *Sensorial evaluation:* five-point Hedonic Scale with corresponding descriptive terms ranging from 5 'like extremely' to 1 'dislike extremely' for both products in each pair of food matrices.



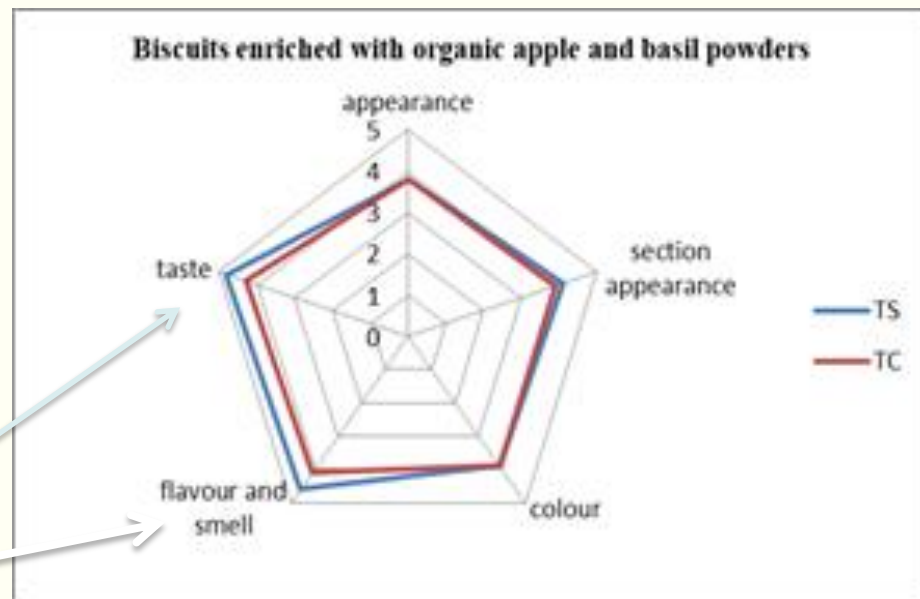
Biscuits enriched with organic lyophilized apple powder and lyophilised basil powder: TC (right) and TS (left)



Results obtained after the sensory analysis of biscuit samples



Sensory analysis-5 point Hedonic scale



Spider plot of organoleptic properties of biscuits enriched with apple and basil powder made using the test control and test sample



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# NUTRITIONAL VALUES

## *Biscuits enriched with organic apple and basil powders*

Average nutritional values for 100 g biscuits	
Energy value	2604,3 KJ
	628,6 kcal
Fat	52,4
Of which saturated fatty acids	32,6
Carbohydrates	31,6
Of which sugars	17,1
Fiber	3,5
Protein	5,9
Salt	0,6

Technological losses (baking and cooling) - 10%

Nutritional values for 100 g of biscuits enriched with organic apple and basil powders.

The calculated energy value is 628.6 kcal for 100g of product.

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# CONCLUSIONS

- The use of organic additives in the form of powder obtained in the the SusOrgPlus project at the Research Centre for Studies of Food Quality and Agricultural Products, USAMV Bucharest, to obtaining Biscuits enriched with organic apple and basil powders, has increased sensory value and is accepted by consumers.
- The evaluation of the organoleptic characteristics emphasized that biscuits enriched with organic lyophilized apple powder and lyophilised basil powder, are very tender and extremely tasty. They have a pleasant taste of walnut and coffee. The basil notes are felt, and also are observed a balanced taste of sweet-aromatic-slightly sour acid specific to dehydrated apple, added in two forms: small pieces and powder.
- It may be concluded from the study that the organic apple and basil powders can be successfully incorporated in biscuits up to a level of 1% to yield biscuits of enhanced nutritional quality with acceptable sensory attributes.
- All the proposed activities were carried out in accordance with the achievement of the proposed objective.
- The Sensory Analysis tests revealed a differentiated influence of organic ingredients SusOrgPlus in the sensory quality of food products.

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## Q&A



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