

# NUTRITIONAL VALUE, SENSORY ANALYSIS AND HEALTH SAFETY OF DO-DO SPICE

PROFESSIONAL PAPER

Ema Obralić\*, Amira Brkić, Enver Zulić

DOI: 10.5281/zenodo.2563068

RECEIVED  
2018-11-19ACCEPTED  
2018-12-20Solana d.d. Tuzla, Ul. Soli br.3, 75000 Tuzla, Bosnia and Herzegovina  
✉ ema.obralic@solana.ba

**ABSTRACT:** DO-DO spice is a nutrient of exceptional quality based on salt intended for final consumer consumption. It is used to enhance the taste of food, and it is added to dishes to enrich the taste. The process of producing DO DO spice is a batch process, and all raw materials used in the production process meet the prescribed specifications. According to the adopted recipe of Solana dd (a joint stock company) Tuzla, the same components are mixed until complete homogenization of the mixture is achieved. Constant monitoring of the production and packaging process is performed with application of the implemented standards ISO 9001: 2015, ISO 22000: 2005, HACCP, HALAL BAS 1049: 2010, KOSHER. The nutritive value of substances used in DO DO spice is 494 kJ / 116 kcal, and due to the presence of vegetable seasoning and the possibility of losing their nutritive properties, it is best to add it at the end of cooking. The aim of Solana dd Tuzla is to produce the spice which is health safety, nutritiously valuable and which has satisfying sensory properties, because what we eat has an impact on our health.

**KEYWORDS:** DO-DO spice, nutritional value, health safety, sensory characteristics.

## INTRODUCTION

Spices are used to improve the organoleptic characteristics of foodstuffs, dishes or finished food products. Spices are parts of plants which by their content change the smell, taste and colour of food, and give it its recognizability, as does the good, domestic DO DO spice. Spice trade has enriched many countries. European expansion began in the 14th century by opening the Spice Route (a name for Malaysian and the Indochinese island). In addition to the economic impact, some spices also have psychological properties which improve the mood; and even in the 12th century, they were used medicinally. One of the products of Solana dd Tuzla based on salt is DODO spice, a mixture of spices which gives traditional dishes of Bosnia and Herzegovina a distinctive taste. Apart from its quality, DO DO spice is a nutritionally valuable foodstuff.

The process of producing DO DO spice is a batch process, and all the raw materials that are used meet the quality. According to the adopted recipe of Solana dd Tuzla, the same ingredients are mixed until complete homogenization of the mixture is achieved. Sensory evaluation is a scientific discipline that analyzes, measures and interprets the reactions of food characteristics that are perceived by senses of sight, smell, and taste. In order to define sensory properties, sensor parameters have often been used: smell, taste, texture, appearance. The smell of the product is felt when the fragrant volatile molecules reach the nose. The optimal smell sensation lasts for one to two sec-

onds. The taste is defined as the sum of perceptions that results from stimulation of the ends of sensations grouped at the entrance of the digestive and respiratory system. The receptors for taste are taste cells inside the taste buds that are located within the oral cavity. There are three kinds of buds: *papillae vallatae*, *papillae fungiformes* and *papillae foliate*. The taste intensity depends on the concentration of dissolved substance, a place which is being stimulated, duration of stimulation, viscosity, chemical state of saliva and temperature. Texture is a feature defined by the way in which the various structural elements are incorporated into the micro and macro structure, and by the effect of their external manifestations in terms of flow and deformation. During the test, the toughness, elasticity, hardness, softness and tenderness of the product are most often evaluated. Appearance is an optical property that is related to the purchase and consumption. The main characteristics are colour (important sensory characteristic), shape and size, clarity and foaming.

## EXPERIMENTAL

The assessment of nutrients in foodstuffs using chemical analyzes is carried out by different methods that are not practical due to a wide range of nutrients. Common methods for evaluating values include: using values from different (but similar) food, calculating values from different forms of the same food, calculating values from other components in the same food, calculating values from domestic recipes

or formulations of commercial products for multi-component foodstuff, converting values from information on the label of commercial food product nutrients, calculation of values from product standards, and assumption of zero value. Evaluation of the nutritive value of DO DO spice is based on analytical methods for determining the proportion of proteins, carbohydrates, fats and oils. The results obtained are compared with the values calculated from other components in the same food. Evaluation of the nutritional value of DO DO spice, which is produced according to a Solana dd Tuzla recipe, was done.

**Table 1.** Nutritive / energy value of DO-DO spice

100 g of the product contains an average of	
Energy value 494 kJ / 116 kcal	494kJ/116 kcal
Proteins	5.50 gr
Carbohydrates	23.0 gr
Fat	0.25 gr

The sensory evaluation of two samples of DO DO spice of 500 g was done at the Faculty of Technology, University of Tuzla. Thirteen testers participated in the sensory evaluation, and the parameters that were examined were the smell, distribution of chopped parts, appearance and colour. The evaluation was done using points from 1 to 5, so that the maximum number of points for the smell was 3,93, and for the other properties was under 3.

**Table 2.** Results of organoleptic assessment of DO DO spice

Quality property	Importance factor	Grade	Points
Smell	0.8	4.92	3.93
Distribution of crushed parts	0.6	3.62	2.17
Appearance, colour	0.6	4.54	2.72
<b>TOTAL</b>			<b>8.82</b>

## RESULTS AND DISCUSSION

The nutritional value of substances in the DO-DO spice is 494 kJ (116 kcal), and due to the presence of vegetable seasoning and the possibility of losing their nutritional properties, it is best to add it at the end of cooking. If the theoretical knowledge and the obtained nutritional value of DO DO spice are compared, it can be noticed that its quantity is negligible when preparing meals. Furthermore, this spice mixture can be used to reduce the salt intake, and at the same time it contributes to enhancement and enrichment of flavours of prepared dishes. Comparing characteristics of salt based spice mixtures by other manufacturers, it can be noticed that DO DO is a product with lower amounts of fat and carbohydrates,

and as such is part of a healthy diet. The sensory evaluation of DO DO spice showed a high score of 8.82 points. The maximum scent score of 3.93 points was related to the peculiarity of the raw materials, which are used in the production, proving the high quality of the raw materials, while the appearance and the colour had a score of 2.72 points. The worst results were observed in chopped parts, 2.17 points, owing to the granulometric composition of the salt which is an essential ingredient of this product.

## CONCLUSION

DO DO spice adds flavour to food, and gives it a distinctive taste of Bosnian and Herzegovinian traditional cuisine. Nutritional value of spice per 100 g is 116 kcal, therefore it is negligible in one dish, but it makes the difference over a longer period of consuming. The production of mixed spices marks its growth. DO DO spice is a product of natural ingredients with a reduced share of flavour enhancers, and with its quality stands out in the market and is incorporated into the trend of healthy nutrition. The sensory evaluation of DO DO spice showed a high score of 8.82 points. The maximum scent score of 3.93 points was related to the peculiarity of the raw materials, which are used in the production, proving the high quality of the raw materials, while the appearance and the colour had a score of 2.72 points. The worst results were observed in chopped parts, 2.17 points, owing to the granulometric composition of the salt which is an essential ingredient of this product. The evaluation results have shown that the sensory properties of DO DO spice, i.e. smell, distribution of chopped parts, colour and appearance, are at a satisfactory level. The quality of DO DO spice meets health safety and nutritional value of the product taking into account the recipe. The results obtained provide the basis for taking further steps in order to improve the product quality, thereby moving it from a quality product group into a premium product group. The aim of this paper was to confirm and present the quality of DO DO spice by scientific methods.

## REFERENCES

- [1] Recipe, documentation Solana d.d. Tuzla, business secret, Tuzla
- [2] Guidebook for the food sector - <https://www.hah.hr/wp-content/uploads/2017/02/vodic-za-prehrambeni-sektor-eurofir.pdf>
- [3] ISO 9001:2015, ISO 22000:2005, HACCP, HALAL BAS 1049:2010, KOSHER – implemented standard Solana d.d. Tuzla

[4] H.T. Lawless, H. Heymann, (2010) *Sensory Evaluation of Food Principles and Practices*, Springer, New York

[5] Ordinance on labelling of the nutritional value of food, *Official Gazette of Bosnia and Herzegovina* no.78, 2012

THIS PAGE OF  
TECHNOLOGICA ACTA  
INTENTIONALLY LEFT BLANK