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ANALYSIS OF ADDITIVES IN SOFT DRINKS

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Abstract: *In this workit studied the label information of random chosen soft drinkson the market regarding the additivesput in them: presarvatives, antioxidants, acidity regulators. The survey data are comparable for the presence and frequency of their use. There is also information about the names and origin of the E - numbers and their impact on human health through colour schemes compare to "traffic lights".*

It was found the role of the label to achieve an informed choice of soft drinks by consumers in their pursuit of a healthy and balanced diet.

Key words: *Soft drinks, additives, preservatives, antioxidants, acidity regulators, labelling*

INTRODUCTION

Abundance of food and drinks brands increase and this gets difficult consumers in their choice. Various advertisements, often even aggressive, which pile the population from the various information sources can be misleading. Soft drinks should favorably affect the nervous system to increase body's defenses, to have tonic, curative and prophylactic effect, and to ensure proper functioning of all metabolic processes. Consumers have accepted drinks as a part of their daily lives, they prefer them to ordinary water, due to the continuous increase in the standard of living and reasonable prices of drinks. Various assortments lead to an increase in the types of packaging used their shape and volume. Development of production and diversification of the assortment of soft drinks is closely connected with significant improvement of their quality. These results are achieved with the successful combination of different raw materials and ensuring of stability in physical-chemical and organoleptic indicators of drinks. Modern technical and technological resources enable to ensure very good physicochemical and biological stability of the manufactured drinks.

In today's global economy foods cross borders and reach consumers through many and various suppling chains. Only one weak link in those chains can drive to consumers' potential health hazards. That is why food safety has become a common responsibility of all agents in the food chain (Frost, 2005). A number of key regulations of the European market and of the Council on food safety operates in the EU [3]. Do we know enough about food products obtained by processing with high pressure? With the decision 2001/424 / EU is allowed only one food product obtained by processing with high pressure. This authorization is received by the French company

Danone for the production of "pasteurized" with high pressure juices from citrus fruits, berries, strawberry, peach, apricot, banana, cherry, coconut, fig, pineapple, etc. The deadlife of these fruit juices is 60 days at temperatures lower than 5° C [1].

Energy drinks called refreshing drinks are liquids that give the body a quick supply of energy. Only few of us are aware of the composition and the effect of these drinks on the body. Researches in this area point that the proportion of students who consume energy drinks is higher than the statistics for the country. It's necessary to take legislative measures to ban advertising and restricting the use of energy drinks among people under 18 years [4]. It has been found that sweetened drinks increase the risk of diabetes [5]. It has been proved that the more consumption of soft drinks among young people, the more aggressive signs are noticed in them [2].

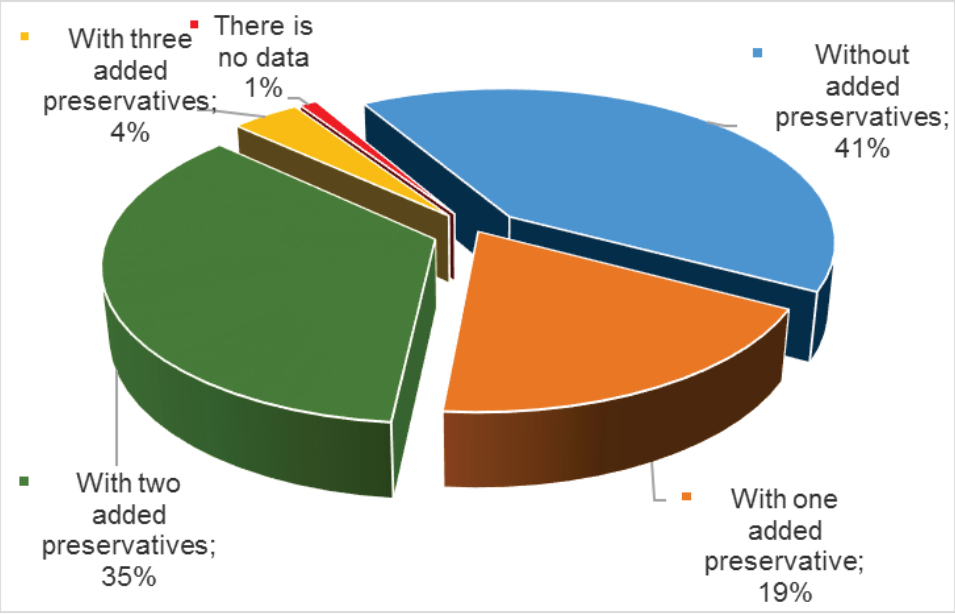
EXPOSITION

In this study it is studied the information from the labels of 102 randomly selected soft drinks from the market concerning added in them preservatives, antioxidants, acidity regulators. These are additives about which the basic legislative requirements, conditions of use and labeling are laid down in Regulation (EU) № 1333/2008 of the European Parliament and the Council of 16 December 2008 about food additives.

What do these additives use for?

- **„PRESERVATIVES** are substances which prolong the deadline of foods protecting them against spoiling caused by microorganisms and/ or to protect them against the growth of pathogenic microorganisms.
- **„ANTIOXIDANTS"** are substances which prolong the deadline of foods protecting them against spoiling caused by oxidation such as fat rancidity and colour changes.
- **„ACIDITY REGULATORS"** are substances which change or control the acidity or food alkality.

To conduct the study it is used the electronic application developed with the program MS Excel. It keeps the database of information collected from the labels on soft drinks. All labels are stored as image files.



Regarding the used preservatives from E200 to E299 the researches show that 41% of soft drinks on their labels is written that they have no added preservatives (Figure 1), with one

preservative are 19% among tested drinks, with two preservatives are 35%, with three preservatives are 4% and there is no data about the presence of preservatives on the labels of 1% among the soft drinks.

If for the soft drinks is used a classification connected with their sort according if they are carbonated or not, Figure 2 shows the quantity of the added preservatives for each of studied soft drinks. It is seen 64% of the non-carbonated drinks and 13% of carbonated ones there are not any added preservatives but 32% of non- carbonated drinks and 39% of carbonated ones there are two added preservatives in each of them.

Statistical processing shows that the added preservatives are from four types in 59 soft drinks (Figure 3). Preservative E 211 is added in most drinks, followed by the E 290.

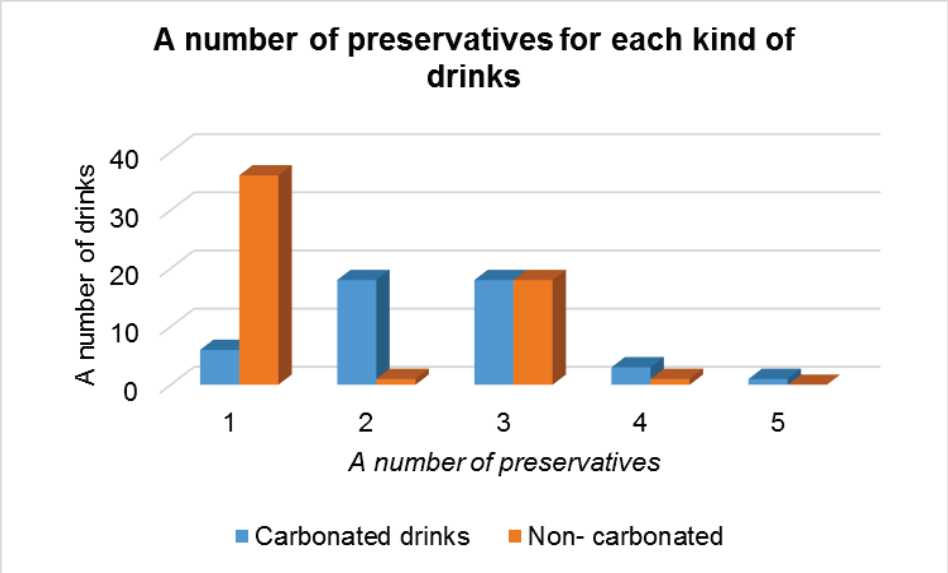


Fig. 2 A number of preservatives for each kind of drinks

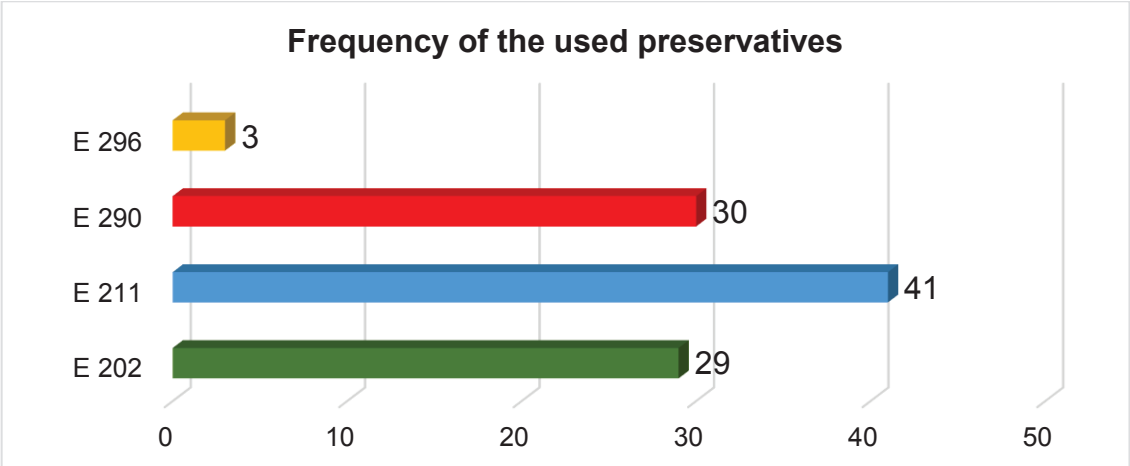


Fig. 3 A number and a kind of added preservatives

Figure 4 shows that preservatives E211 and E290 are added in more carbonated drinks than in non- carbonated.

Regarding the added antioxidants in the tested soft drinks, the processed data show that in 57 of soft drinks the manufacturers have added only one antioxidant, in 33 of drinks are added two antioxidants, in 1 product they have added three antioxidants, 2 products are with four antioxidants, and for 9 of soft drinks there is no data on the labels (Figure 5). There is no a product on which is marked that there are no any antioxidants.

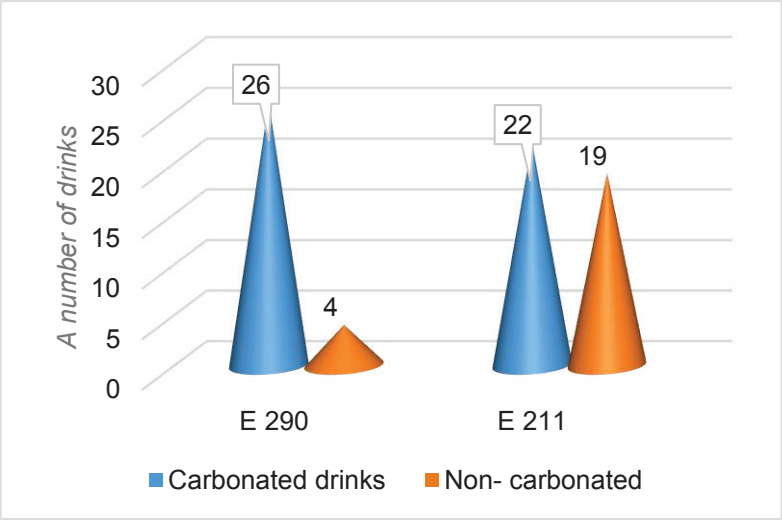


Fig. 4 A kind of soft drinks and added preservatives

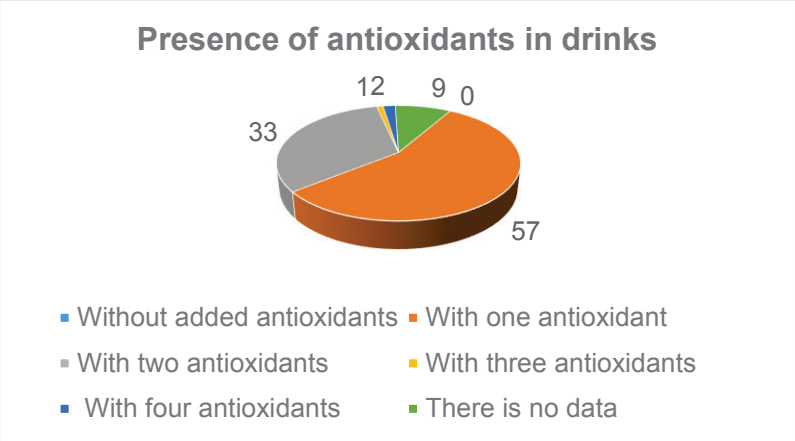


Fig. 5 A number of added antioxidants

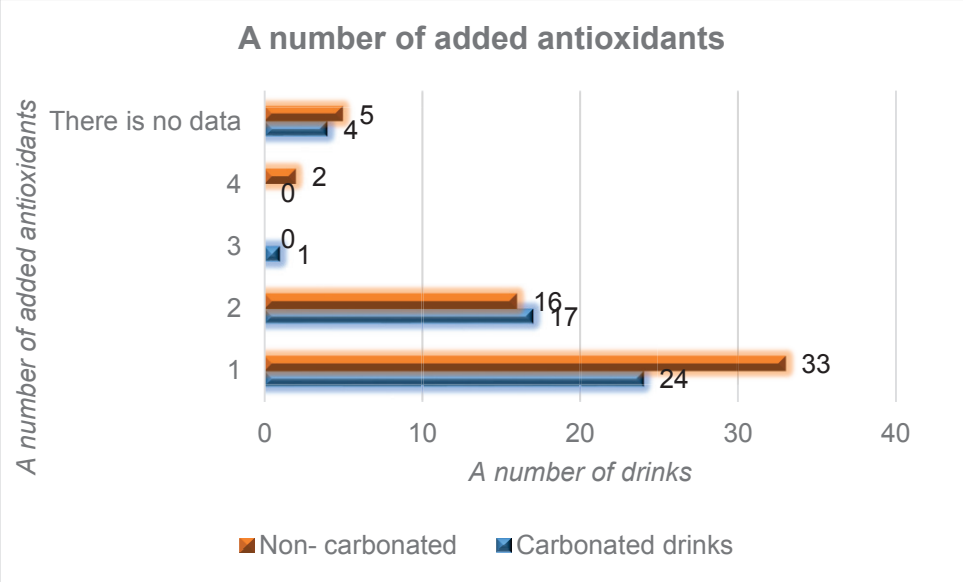


Fig. 6 A kind of antioxidants drinks and antioxidants

The number of added antioxidants according to the kind of drinks is shown in Figure 6, where it can be seen that drinks with one or two antioxidants predominate among carbonated and non-carbonated soft drinks.

The image of the types of antioxidants added in soft drinks together with their "numbers" from the group called E's is given in Figure 7 and shows that E 330 is added most often and E327 is added most rarely.

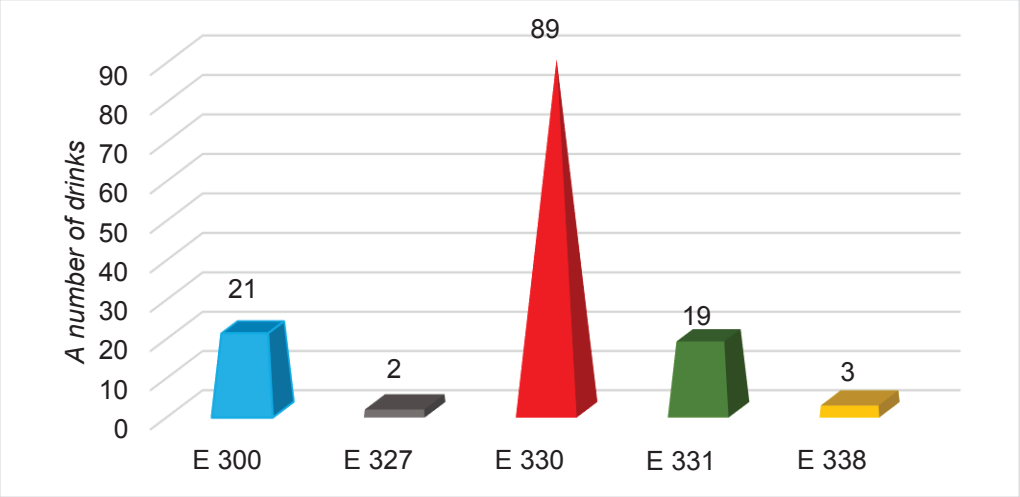


Fig. 7 Kinds of antioxidants

Table 1 presents the names, the origin, meaning and assessment for analyzed additives [2, 4, 5]

Table 1

E№	Name	Origin and effect	Assessement
E 202	Potassium sorbate	Artificially produced	Harmless
E 211	Sodium benzoate	Artificially produced	Often causes allergies and overtaxes, if it is possible to be consumed rarely
E 290	Carbon dioxide	Natural or artificially produced (marble or limestone)	Harmless
E 296	Malic acid	Natural or natural identical	Harmless
E 300	Ascorbic acid	Artificial	Harmless in normal quantities
E 327	Calcium lactate	Produced from lactic acid	Harmless
E 330	Citric acid	Artificially produced from sugar waste	Can caused allergis, large quantities lead to local irritations in mouth and tooth decay
E 331	Sodium citrate	Sodium salts of citric acid (natural identical)	Harmless
E 339	Phosphoric acid	Artificial	Harmless in small quantities

CONCLUSION

From conducted researches it can be concluded that in 64% of non- carbonated drinks and 16% of carbonated ones are not used preservatives. But in 32% of non- carbonated drinks and 39% of carbonated ones are used two preservative. Soothing factor is that three of four identified preservatives in the tested drinks are harmless to human health. Sodium benzoate, which causes allergies, overtaxes the liver and is good to be consumed rarely is added in most drinks - 41, as it occurs in 34% of non- carbonated drinks and in 48% of carbonated soft drinks.

There is no product among the tested soft drinks, the label on which it is noted that an antioxidant was used. Most used antioxidant E330 - Citric acid (added in 87% of drinks) can cause allergies, irritations in the mouth and tooth decay.

As a whole, it can be concluded that the research shows that consumers can make an informed choice from the labels of the drinks about the additives used in their manufacture. If marking as "Traffic lights", about the effect of additives on human health is introduced, it will make consumers easy for their healthy selection of drinks.

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