# Classification of Food Additives by Chemical Composition

***Ibragim Askarov***
*Doctor of chemical sciences, professor, department chemistry, Andijan State University, Republic of Uzbekistan, Andijan*

***Dilorom Xasanova***
*Ph.D. in Chemistry, Associated Professor, Andijan State University, Republic of Uzbekistan, Andijan*

***Gulmirakhon Umarova, Ugilkhon Tulanova***
*Master of the Andijan State University, Republic of Uzbekistan, Andijan*

A B S T R A C T

*This article examines a range of food preservative additives used in the preparation of certain beverages. Homemade juices, compotes and fermented milk products are selected. By adding various amounts of preservatives to these products, their organoleptic properties were studied.*

A R T I C L E I N F O

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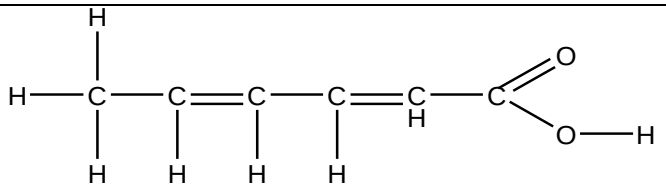
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Food additives are known to be approved for use and are added to consumer products. But some of them are toxic. That is why people need to know about the properties of nutritional supplements to prevent their health. Harmful substances can cause various diseases in the human body. For example, it increases the risk of allergies and can lead to chronic diseases. Some of them can cause gastrointestinal problems, skin rashes, high blood pressure, and carcinogenic effects. The use of the most harmful compounds in the food industry is prohibited [1]. Reducing the intake of harmful food additives means preventing the development of various diseases. Food additives are divided into the following classes:

| | | | |
|---|---|---|---|
| E100- E199 | ***Dyes*** | E200-E299 | ***preservatives*** |
| E300-E399 | ***Antioxidants*** | E500-E599 | ***Emulsifiers, pH regulators*** |
| E400-E499 | ***Stabilizer*** | E700-E799 | ***Antibiotics*** |
| E600-E699 | ***Odor and taste enhancers*** | E900-E999 | ***blowing agents*** |
| E800-E899 | ***stock islands*** | E1000-E1999 | ***Biocatalysts*** |

The following are the technical names and chemical formulas of some food additive preservatives:

***Table 1.*** **Chemical formulas of some nutritional supplements**

| **Chemical name** | **Index** | **Formula** |
|---|---|---|
| Sorbic acid | E 200 |  |
| Sodium sorbate | E 201 | |
| Potassium sorbate | E 202 | |
| Calcium sorbate | E 203 | |
| Sodium benzoate | E 211 | |
| Sodium nitrite | E 250 | |
| Acetic acid | E 260 | |

The following table provides information on the effects of some nutritional supplements on the body:

***Table 2.*** **Dangerous food additives**

| | |
|---|---|
| Very dangerous | E123, E510, E513, E527 |
| Dangerous | E102, E201, E400, E503, E110, E220, E401, E620, E120, E222, E402, E636, E124, E223, E403, E637, E127, E224, E404, E129, E228, E405, E155, E233,<br>E501, E180,E242, E502 |
| Carcinogenic substances | E131, E316, E283, E142, E219, E310, E153, E230, E954, E210, E240, E212, E249, E213, E280, E214, E281, E215, E282 |
| Substances that strongly affect the stomach | E338, E463, E339, E465, E340, E466, E341, E343, E450, E461, E462 |
| Substances that cause skin diseases | E151, E907, E160, E951, E231, E1105, E232, E239, E311, E312, E320 |
| Substances that inhibit the intestinal microflora | E154, E633, E626, E634, E627, E635, E628, E629, E630, E631, E632 |
| Substances that affect blood pressure | E154, E250, E252 |

Food manufacturers are required to list the food additives used in a given product on its packaging. Before buying, it is advisable for the consumer to study the composition of the product. The following are some of the features of the E220 food supplement.

E220 - sulfur dioxide $SO_3$ or sulfuric anhydride is contained in 99% of wine products, has an unpleasant odor. This substance is used in the food industry as a preservative to prevent the growth of fungi and microorganisms. Standard values for $SO_3$ have not yet been developed. Increasing its concentration poses a danger to human health. Symptoms of E220 poisoning include headache, cough, sore throat, nausea and vomiting. The high content of E220 in wine destroys B vitamins and leads to allergic diseases of the skin, hair and nails, and causes disorders of the digestive system. E220 is used in the processing of almost all dried fruits [3,4].

We studied a number of food preservative additives used in the preparation of some drinks. For this, homemade juices, compotes and fermented milk products were chosen. By adding preservatives in various amounts to these products, we studied their organoleptic properties for several days, and the data obtained were entered in the table [5].

The following table shows the effect of some food preservatives on food. We prepared apricot juice in a natural way and recorded in the table the effect on it of different concentrations of citric acid. The same experimental samples were carried out at a temperature of $20^0$ C.

***Table 3.*** **The results of experiments carried out with citric acid**

| **1 day** | | | | | |
|---|---|---|---|---|---|
| № | Samples | Organoleptic indicators | | | |
| | | Smell | Taste | Coloring | Turbidity |
| 1 | Natural juice | Hasn't changed | Hasn't changed | Hasn't changed | Hasn't changed |
| 2 | 1 sample | Hasn't changed | Hasn't changed | Hasn't changed | Hasn't changed |
| 3 | 2 sample | Hasn't changed | Hasn't changed | Hasn't changed | Hasn't changed |
| **2 day** | | | | | |
| 1 | Natural juice | Has changed | The taste of fermentation | Has changed | There is clouding |
| 2 | 1 sample | Hasn't changed | Hasn't changed | Hasn't changed | Hasn't changed |

| | | | | | |
|---|---|---|---|---|---|
| 3 | 2 sample | Hasn't changed | Hasn't changed | Hasn't changed | Hasn't changed |
| **3 day** | | | | | |
| 1 | Natural juice | There was a pungent odor | Came to an unusable state | muddy | Became cloudy |
| 2 | 1 sample | Has changed | The taste of fermentation | Has changed | A white film appeared on the surface |
| 3 | 2 sample | Hasn't changed | Hasn't changed | Hasn't changed | Hasn't changed |
| **4 day** | | | | | |
| 1 | Natural juice | There was a pungent odor | Came to an unusable state | muddy | Became cloudy |
| 2 | 1 sample | There was a pungent odor | Came to an unusable state | muddy | A white film appeared on the surface |
| 3 | 2 sample | Has changed | The taste of fermentation | Has changed | clouding |

Note: 1 is sample. Addition of 1% citric acid solution; Sample 2. 5% citric acid solution is added.
The results of the experiment showed that substances with preservative properties in various concentrations had a significant effect on food products.

In conclusion, it should be noted that the greater the content of food additives (preservatives) in drinks, the longer their shelf life. However, increasing the concentration of food additives can adversely affect the human body. Therefore, the amount of food additives in food should be strictly controlled in the amounts specified in the technical specifications.

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