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CHEMICAL COMPOSITION AND CLASSIFICATION OF CHEWING GUM ACCORDING TO COMMODITY NOMENCLATURE FOREIGN ECONOMIC ACTIVITY THE REPUBLIC OF UZBEKISTAN

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Abstract

In this article, types of chewing gum are analyzed, their chemical composition is studied, and classification criteria according to the Commodity Nomenclature of Foreign Economic Activity are developed and recommended for customs practice. It was established that the amount of vitamins in the studied samples of chewing products is less than the regulatory requirements, and the amount of vitamins in some samples is more than the norm, i.e. 2.5 times more, and harmful dyes such as E171, E170, E903 were also detected more than normal1.

Keywords: *Chewing gum, Commodity nomenclature for foreign economic activity, assortment of chewing gum, classification, chemical composition*

Introduction

The origin of chewing gum goes back to the distant past, that is, the first mention of it appeared 5000 years ago in Ancient Greece. The Greeks, as well as the inhabitants of the Near East, washed their teeth by chewing rubber and mastic resin, and this product can be called the first prototypes of chewing gum.

But the origin of chewing gum, which is approximately similar to the real one, dates back to 1848. Of course, it is very different from the modern one. The base of the gum, the composition – everything was made of rubber, and it looked different.

Its creator was John Curtis – an Englishman who created gum from resin with the addition of beeswax. He cut it into small pieces, wrapped it in paper and sold it. Some time later, Curtis added spices and kerosene to his invention, which gave the gum its flavor. Although all this did not save the situation where the chewing gum could not withstand heat and sunlight and lost its presentation in a short time.

The composition of the chewing gum, which was very primitive, underwent some changes only in 1884. Improved chewing gum was developed by Thomas Adams.

His first gum had an elongated shape and a licorice flavor, but the product was short-lived. The problem was solved by adding sugar and corn syrup. Since then, chewing gum has gradually evolved into the product we are used to seeing.

Adams was the creator of the first fruit-flavored chewing gum called Tutti Frutti. This gum is still produced today.

In 1892, the still famous Wrigley's Spearmint chewing gum appeared, created by William Wrigley. In addition, he improved the technical production of the product – the chewing gum itself, its composition, underwent changes: the shape was expressed in the form of a plate or ball, and components such as powdered sugar and fruit additives were added.

Gum's chemical components

At the beginning of the last century, chewing gum manufacturers developed a single formula for what real chewing gum should be.

Table 1. *The chemical composition of Chewing gum*

Substance Percentage	Procent
Sugar	60%
Rubber	20%
Aromatic Ingredients	1%
Corn syrup	19%

Modern manufacturers produce their products in the following composition:

1. Chewing base.
2. Aspartame.
3. Starch.
4. Coconut oil.
5. Various paints.
6. Glycerin.
7. Natural and artificial flavors.
8. Technical ionol.
9. Acids: apple and lemon.

Such a composition raises doubts about the usefulness of chewing gum. But without chemical components, modern chewing gum cannot retain its taste for a long time and cannot be stored for a long time.

The benefits of chewing gum

Although the use of chewing gum is the cause of many debates about its benefits and harms, nevertheless, this does not reduce its relevance. Chewing this product brings its benefits to people. The gum makes your breath fresh and pleasant.

Regular chewing helps strengthen the gums. This is true, but for this you need to chew equally on both sides of the mouth, otherwise you can achieve the development of facial asymmetry. Maintains the acid-base environment of the oral cavity.

Gum damage

Every day, hundreds of thousands of people, maybe even more, chew gum without thinking about its effects on the body. But chewing gum can be harmful.

Regular use prevents the normal production of saliva. The amount of saliva increases quantitatively and this is a negative deviation from the norm.

Do not chew gum on an empty stomach. This can lead to the production of gastric juice, which irritates the walls of the stomach and eventually leads to gastritis.

Although chewing gum strengthens the gums, it can have a negative effect on the gums. As a result, blood circulation may be impaired, which leads to inflammation or periodontal disease.

Recently, scientists have found that regular chewing of gum contributes to delayed reaction and deterioration of mental abilities.

If you have fillings on your teeth, chewing gum can cause them to fall out.

Chemical carcinogens have a negative effect on the body, including the development of various diseases. First of all, the gastrointestinal tract can be affected.

In the composition of the gum

Normal chewing gum – "jevachka" contains 7 types of additives:

1. Gum yeast The main ingredient of gum is: rubber, telastomer, tree glue, binel polymer, paraffin.

2. Sweeteners: there are 7 types, and because they are not natural, they all disrupt the digestion in the stomach and intestines, and

prepare the ground for diabetes. In addition, some sweeteners, such as asaptom, disrupt brain activity, cause dizziness and fainting.

Swelling of the lips, tongue and feet. Asaptom contains an amino acid called phenylalanine, and its metabolic residues accumulate in the blood and urine. It affects many developing organs and brains of children.

3. There are three fragrances close to nature, and gene technology is the main fragrance.

4. Humectant – glycerol. Pig fat is most likely from livestock products. It is done on the basis of gene technology and non-technology.

5. Emulsifier – lecithin, mainly pork product. Plant-based emulsifier is made from genetically modified beans.

6. There are two types of glossing substances, "shellac" – obtained from genetically modified plants, which leads to allergies, "carnauba wax" – synthetic wax. It is used in the paper and furniture industry.

7. Van am retainer titanium dioxide, which gives color. E-171 is one of the main substances used in nanotechnology, nanoparticles. One of the main substances used in nanotechnology is nanoparticles. Because it is strong, it affects the body's water exchange.

What chemical additives are included in the composition of "Orbit"?

Orbit is a chewing gum that contains various artificial fillers. However, this manufacturer is very popular, which explains the popularity of the product it produces.

If you read the contents of Orbit chewing gum on the back of the package, you can see the following items:

- Chewing base – polymer latex.
- Sweet taste components – maltitol E965, sorbitol E420, mannitol E421, aspartame E951, acesulfame K E950.
- Various natural and artificial flavors depending on the intended flavor of the gum.
- Coloring substances: E171 – titanium dioxide, gives a snow-white color to the chewing gum.
- Additional components: emulsifier E322 – soy lecithin, antioxidant E321 – artificial substitute for vitamin E that inhibits oxidation, sodium bicarbonate E500ii, thickener E414, emulsifier and defoamer, stabilizer E422, glaze E903.

Orbita is also available without sweeteners. The composition of sugar-free Orbit chewing gum is the same as regular chewing gum, only it contains sweeteners: xylitol, sorbitol and mannitol.

"Dirol": component composition

Dirol is another well-known chewing gum manufacturer. The components it's made from are different from those used for the Orbit, but there are still some similarities.

The composition of Dirol gum:

- Chewing base – polymer latex.
- Sweeteners – isomalt E953, sorbitol E420, mannitol E421, maltitol syrup, acesulfame K E950, xylitol, aspartame E951.
- Flavoring additives depend on the expected flavor of the gum.
- Dyes – E171, E170 (calcium carbonate 4%, white paint).
- Additional elements – emulsifier E322, antioxidant E321 – artificial replacement of vitamin E, which helps to inhibit oxidation processes, stabilizer E441, texturizer E341iii, thickener E414, emulsifier and defoamer, stabilizer E422, glaze E903.

E422 causes intoxication of the body when it enters the bloodstream.

E321 increases the level of bad cholesterol.

E322 increases the production of saliva, which subsequently has a negative effect on the gastrointestinal tract.

Citric acid can cause swelling.

Gum "Eclipse"

The composition of Eclipse gum is as follows:

- Base – latex.
- Sweeteners – maltitol, sorbitol, mannitol, acesulfame K, aspartame.
- Fragrances are natural and the same as natural. They depend on the taste of the gum.

Dyes – calcium carbonate 4%, E171, blue dye, E132.

Additional substances – E414 (gum arabic), stabilizer E422, glaze E903, antioxidant E321.

Chewing gum "Freshness Avalanche"

Avalanche of Freshness gum is sold in the form of small balls of blue, blue and green colors.

This gum is sold by weight, not in multi-piece packs. But mainly, the sale of such chewing gum is carried out with the help of special machines – by pieces.

The composition of Avalanche of Freshness chewing gum has the following composition: latex, sugar powder, caramel syrup, glucose, bubble gum and menthol aroma, shiny blue and sea wave coloring components, E171, E903.

The USA, Russia and Brazil are the countries that export the most chewing gum products (Fig. 1).

Figure 1. *Countries that export the most gum*

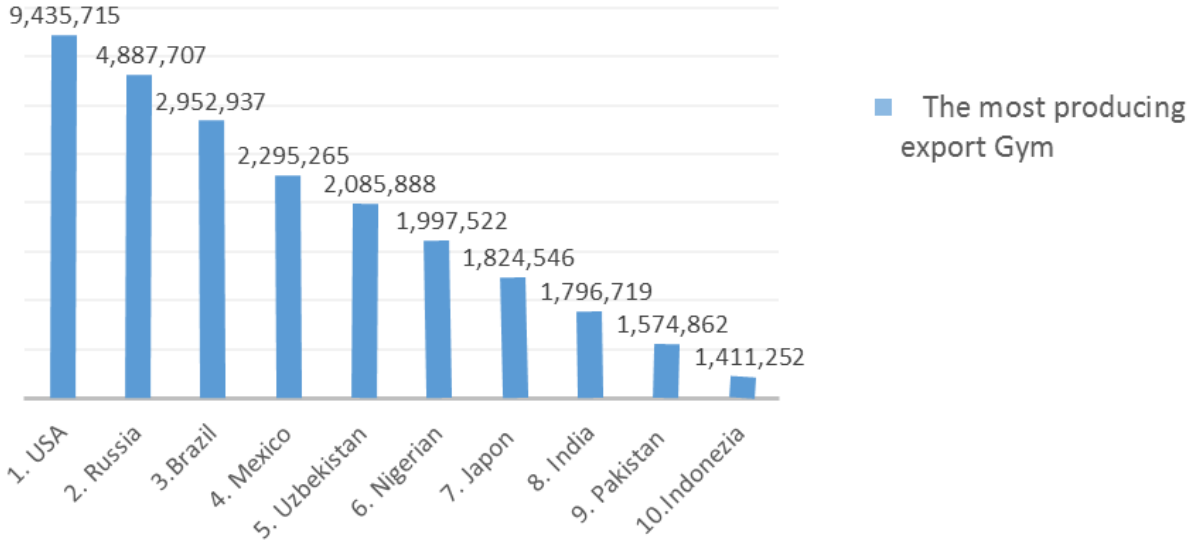
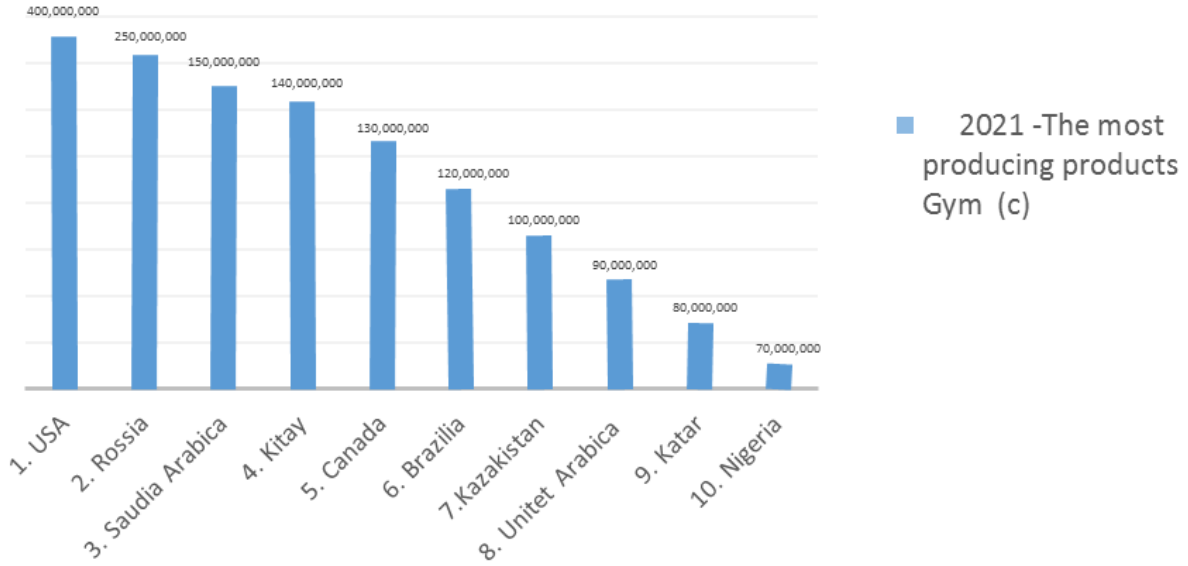


Figure 2. *Gum producing countries*



Information on the most producing countries (Figure 2) is also provided.

Chewing gum is located in group 09 of commodity nomenclature foreign economic activity according to types and level of processing.

+ 2106 90980 1 sugar-free chewing gum sugar-free chewing gum (sucrose) with sugar substitute

– 2106 90980 2 – – – – chewing gum without sugar (semi-finished product) is included in the product subheadings like others. Also refer to the Notes of group 21, ispolzuemye v kachestve lekarstvennyx sredstv, ili prochie produkti tovarnoy positsii 3004; can be Group 3004 See explanation, + 3004 60000 0 – other, containing antimalarial active (deystvuyushchie) substances, indicated in the subposition of 2 data groups. In order to identify types of Jevatelnaya rezinkan in commodity groups 2106 and 3004, classification criteria were developed and put into customs practice.

Conclusion

Thus, in our research work, the chemical composition of Chewing gum species was studied and the criteria for their identification and classification in commodity groups 2106 and 3004 according to commodity nomenclature foreign economic activity ac were developed and recommended for customs practice. It was found that in the studied Chewing gum products, vitamins are less than the standard requirements, one sample contains more vitamins than the standard, i.e. 2.5 times more, and it also contains various poisonous crystals E171, E903.

References

Andreeva, E. I. Development of methodology and improvement of the mechanism for managing the identification of goods for customs purposes: Monograph / E. I. Andreeva. M.: RIO Russian Customs Academy, 2016.– 202 p.

Gail, L. Kramer, Clarence, W. Jensen, Douglas, D. Southgate Jr. Agricultural economics and agribusiness.– New York, 2001.– 519 p.

Gibilisko, S. Alternative energy without secrets / Stan Gibilisko; [transl. from English A. V. Solovyova].– M.: Eksmo, 2010.– 368 p.– (No secrets).

Shalygina, A. M., Kalinina, L. V. General technology of milk and dairy products.– Moscow: Colossus, 2006.– P. 180–182.

Dodaev, K. O., Absalyamov, F. M., Begmatov, A. B. Tuya sutuningshifobakhshlikhususiyati // “Kimevaozik-ovkat mxsulotlarining sifati hamda havfsizligini taminlashda innovation technologylar”. Mavzusidagi II Republic Ilmiy Amaliy-Technikaviy Conference Materiallari.– Tashkent, TKTI. (May 17, 2019).– P. 144–145.

Methods for determining toxic elements // State standards. Raw materials and food products.– Moscow: IPK publishing standards, 2002.– P. 50–70.

Ibragimov, U. K. Evaluation of antioxidants – food additives // STANDART, 2002.– No. 1.– P. 58–59.

Karimkulov, K. M., Uzohkov, I. E., Sarikulov, M. K. Studying The Classification and Quality of Food // The American Journal of Agriculture and Boimedical Engineering, 2021.– Vol. 03.– Issue 03–06.– P. 32–38.

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