

# Classification and certification of medicinal substances used in the treatment of goiter based on their chemical composition

**A.B. Yolchiyev**

Andijan State University, Doctor of Science in Technical Sciences

**F. Yu. Sultanova**

Andijan State University, 2nd stage graduate student

## ABSTRACT

In this article, there are recommendations on the classification and certification of medicinal substances used in the treatment of goiter based on their chemical composition.

## Keywords:

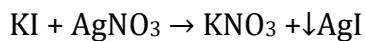
antiseptic substance, hyperthyroidism, endemic goiter, authenticating reaction, classification, certification.

Preparations containing iodine have various properties. Iodine preparations are widely used for surface use as antiseptics. It is also widely used as a sedative and distracting drug in inflammatory diseases of the skin and mucous membranes. Iodine preparations are prescribed for atherosclerosis, chronic inflammatory diseases of the respiratory tract, hyperthyroidism, and endemic goiter. To eliminate the condition of iodine deficiency, human iodine preparations are used for prevention and treatment. These are:

### **1) Potassium iodide (Kalii iodidum) - KI**

*Detergent reactions:* Iodine ions are detected by standard analytical reactions.

*Determination of iodine:* If a solution of silver nitrate is poured into a solution of potassium iodide, a pale yellow precipitate is formed. this precipitate differs from chloride and bromide ions in that it is insoluble in ammonia solution.



*Use:* 0.3-1 gram 3-4 times a day after meals in case of hyperthyroidism, endemic goiter, inflammation of respiratory tract, eye diseases, bronchial asthma. In case of pulmonary

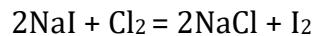
actinomycosis, 10-20% solutions are drunk four times a day from one tablespoon.

### **2) Microiodine (Microiodium).**

*Ingredients:* 0.0005 grams of iodine, 0.005 grams of potassium iodide, 0.05 grams of valerian root powder, up to 0.25 grams of filler. *Usage:* in the case of thyrotoxicosis, one dragee is taken 2-3 times a day after meals. After 10-20 days, the course of treatment (20 days) is repeated.

### **3) Sodium iodide (Natrii iodum) - NaI.**

*Reactions that determine the authenticity:* when a solution of  $FeCl_3$  is added to a salt solution (1:20) with a few drops of HCl and chloroform and shaken, iodine is released, which turns chloroform purple:

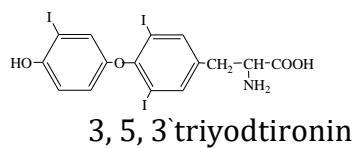
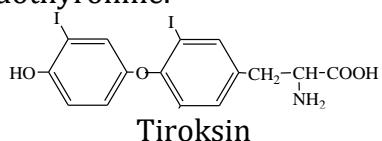


*Usage:* This medicine is used in the same cases as potassium iodide is used. Drink 0.3-1 grams 3-4 times a day.

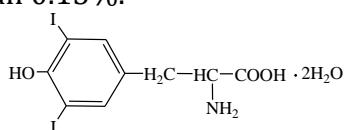
### **4) Thyroidin (thyreoidinum).**

Hormonal preparation obtained by grinding defatted and dried thyroid glands of slaughtered cattle. *Synonyms:* Thyranon, Thyroid.

**Composition:** consists of thyroxine and triiodothyronine.



**Reactions that determine authenticity:** The drug is burnt to ash, the residue is dissolved in water and filtered. Iodine is determined from the filtrate. The drug should not contain excess protein, inorganic compounds of iodine, heavy metals, and should not contain more than 2% residue when heated. The amount of iodine in the drug should not be less than 0.85% and not more than 0.15%.



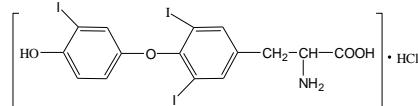
Diiodtirozin (L-β-(3,5-diod-4-oxifenil)-propionic acid)

**Use:** used in diffuse toxic goiter, hyperthyroid forms of goiter and other diseases accompanied by thyrotoxicosis.

#### 6) **Triiodothyronine hydrochloride (triiodothyronine hydrochloridum)**

A synthetic drug that matches the natural hormone of the thyroid gland.

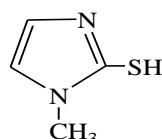
**Synonyms:** liothyronin, liothyroninum, thryonine.



#### 7) **Mercazolil (mercazolilum).**

**Composition:** 1 - methyl- 2 - mercaptoimidazole.

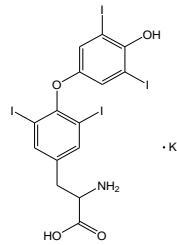
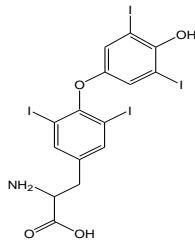
**Synonyms:** methimazole, thymidazole.



**Use:** diffuse toxic goiter

#### 8) **Thyreocomb (thyreocomb).**

**Composition:** one tablet contains 0.01 mg of liothyronine, 0.07 mg of levothyroxine, 0.15 mg of potassium iodide.



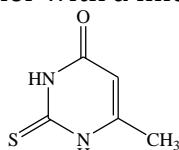
**Composition:** one tablet contains 0.01 mg of liothyronine, 0.04 mg of levothyroxine.

**Uses:** Hyperthyroidism, euthyroid goiter, prevention and treatment of goiter after removal.

#### 10) **Methylthiouracil**

**Composition:** 6 - methyl - 1,2,3,4 - tetrahydropyrimidinone - 4 thione - 2

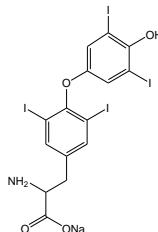
A white or yellowish crystalline powder, poorly soluble in water and alcohol, with a bitter taste, is obtained synthetically. It is often used together with a microdose of diiodotyrosine or iodine.



**11) Radioactive iodine treatment:** sodium O-iodipurate solution for injection labeled with iodine-131. Clear colorless or slightly yellowish liquid.

### 12) L-Thyroxine

**Ingredients:** Sodium levothyroxine



### Problems of classification and certification of chemical preparations containing iodine

Since the 1850s, with the development of international economic relations, naming goods, classifying them based on their chemical composition and assigning codes according to the classes, and certifying goods have become one of the problems in science.

On January 1, 1994, all goods in Uzbekistan can be declared internationally. Currently, in the 2017 version of the collection called "Nomenclature of foreign economic goods of the Republic of Uzbekistan", all goods are divided into 97 groups. Each product is classified based on its chemical composition and given a corresponding certificate.

Currently, on the basis of a globally harmonized system, all types of goods are classified according to 6 rules that are used in practice, and international code numbers are assigned. According to rules 1-5, goods are classified according to the 4-digit number, that is, according to the position of the goods. The harmonized system (HS) determines the main rules of classification of goods.

These rules require uniform interpretation in HS. HS forms the basis of *Nomenclature of goods of foreign economic activity*. To classify goods based on HS, the following are the main indicators of goods:

- characteristics of material or components;
- size;
- quality;
- quantity;

- weight;
- value;
- potential of goods in foreign trade.

When classifying goods on the basis of harmonized system, it is necessary to follow some of the following rules:

*Rule 1.* The names of sections, groups and subgroups are intended only for ease of use of nomenclature in work.

*Rule 2.* For legal purposes, the classification of goods is determined according to the names of commodity positions and comments to sections and groups. If such names and comments are not interpreted in accordance with the rules.

(a) Any classification under a particular heading shall be understood as including the goods in an unfinished or unfinished state.

b) In the product heading, the classification of a single product should be understood as including a mixture of these substances or a combination with other substances or substances.

*Rule 3.* A and B are classified according to the rules when they have the highest sequence number at the end of their respective positions.

*Rule 4.* The product positions of the relevant goods, which are most similar to the goods that cannot be classified in accordance with the above-mentioned rules, are classified.

*Rule 5.* In addition to the mentioned regulations, necessary regulations have been adopted

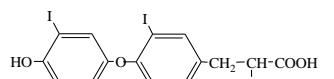
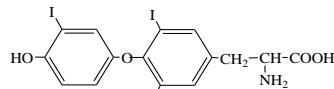
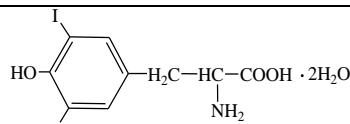
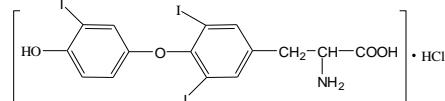
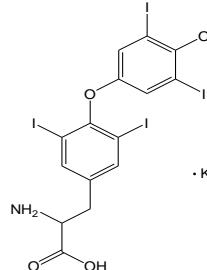
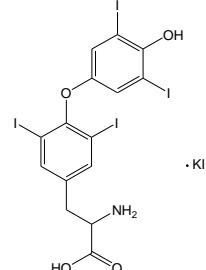
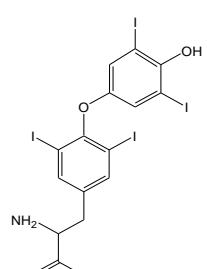
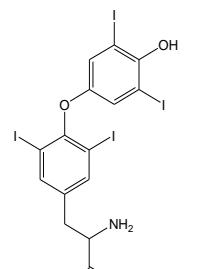
*Rule 6.* Commenting on it is carried out from the legal point of view in the auxiliary position of any goods position in accordance with the

content or relevant comments of this auxiliary position.

We used the above rules and their chemical composition to classify the drugs used in the treatment of gout. That is, we founded a

functional group that unites each drug. For example, the mentioned inorganic compounds, amino acid-based compounds, and heterocyclic compounds:

1 - *table*
**Classification of drugs used in the treatment of goiter based on their chemical composition**

Class	Formula	Composition
<b>Inorganic iodide derivatives</b>	Potassium iodide Sodium iodide	KI NaI
<b>Amino acid derivatives</b>	Thyroidin (Thyroxine and 3,5,3'-triiodothyronine)	 
	Dioxyrosine (L-β-(3,5-diiodo-4-oxyphenyl)- propionic acid)	
	Triiodothyronine hydrochloride	
	Thyrocomb (Liothyronine, levothyroxine, potassium iodide)	 
	Thyrotton (Lioritonin, Levothyroxine)	 

<b>Heterocyclic compound derivatives</b>	Mercazolil 1-methyl-2-meric ptoimidazole	
	Methylthiouracil 6- methyl - 1,2,3,4 - tetrahydropyrimidinone-4 thione-2	

After the drugs are classified, they are given code numbers. We also recommend that after dividing the drugs used in the treatment of gout into classes, they should be coded as follows:

**2 - table**

**Code numbers recommended by TIF TN for drugs used in the treatment of gout**

Code numbers given by TIF TN		Recommended code numbers for TIF TN	
Class	Code number	Class	Code number
Iodine-sparing medicinal preparations or iodine compounds	3004900001	Inorganic iodide derivatives	3004900001
		Derivatives based on amino acids	3004900002
		Heterocyclic compound derivatives (and others)	3004900003

Previously, according to the *Nomenclature of goods of foreign economic activity*, the code number 3004900001 was assigned to "iodine and iodine-retaining preparations". After classifying drugs into classes, we recommend the separate code numbers listed above for each class.

6. [www.webapteka.ru](http://www.webapteka.ru)

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