



## DETERMINATION OF MACRO AND MICRO ELEMENTS IN RAIS-BASED BIOACTIVE ADDITIVES AND CONTENT

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Article history:	Abstract:
<b>Received:</b> 26 <sup>th</sup> March 2021 <b>Accepted:</b> 7 <sup>h</sup> April 2021 <b>Published:</b> 23 <sup>th</sup> April 2021	This article provides information on the methods of preparation of raisins from grapes, the chemical composition of grapes and raisins, as well as their use in medicine. There is also a method of obtaining a biologically active supplement in the form of capsules based on natural sources of raisins, which provide the body with iodine in the treatment of endocrine diseases caused by iodine deficiency.
<b>Keywords:</b> Grapes, raisins, endocrinology, vitamins, micro and macronutrients, glucose, pectin, protein, carbohydrates.	

### INTRODUCTION.

Today, in order to isolate natural medicinal substances from plants around the world and develop a technology for the production of new types of medicinal natural capsules from local dried fruits, raisins made from natural grapes are soaked in various micro and macro elements, vitamins and aqueous extraction of medicinal plants. One of the current topics is the development of technologies for obtaining biologically active supplements with natural capsules by soaking the extracted dry extracts in raisins.

Today, most varieties of grapes are grown in European countries, and their taste and chemical composition vary depending on the growing conditions. Vine is an ancient flowering or closed-seeded plant belonging to the **Vitis** family of the **Vitaceae Juss** family. Occurs in temperate, subtropical and tropical regions of the world. The vine grows in evergreen tropical forests, as well as on river banks and mountain slopes, mostly in the wild. A vine is a creeping liana-shaped plant that, by means of its curls, clings to the surrounding trees and shrubs and grows all its stem and leaf size by placing them on top of them. According to some historical data, the vine was planted about 5-6 thousand years ago in Central Asia, Transcaucasia, Syria, Mesopotamia, Egypt, 3,000 years ago in the Black Sea and Mediterranean countries, China, and later in France. The Tokdosh family includes 14 genera, about 1,000 species. They differ from each other depending on their morphological features, biological characteristics and use. Wild species of vines, mainly in Africa and Asia, are found in 6/1 of the tropical and subtropical regions of America.

### THEORETICAL PART

In Central Asia and other parts of the Commonwealth, species of the vine *Vitis*, *Ampelopsis* and *Partenotsissus* grow in the form of creeping, sometimes shrubby and small trees. There are also species with different appearance of leaves, twigs, inflorescences, flowers, buds, seeds. Over the past 15 years, the cultivation of edible grapes has increased 3.5 times in Chile, 2.5 times in South Africa, 2 times in Australia and 1.5 times in Algeria. The main reason for this is that the grape-growing countries in the Southern Hemisphere make a large profit by supplying food varieties to European countries (mainly Germany, France, the United Kingdom, etc.) during the winter months (Figure 1).



**Figure 1. Black (raisin) seedless grapes are its raisins and soup grapes**

An average of 1 million people die each year worldwide. tons of raisins are prepared. Turkey (36,000 tons) and the United States (California, 34,000 tons) are leading in this regard. Quality raisins are also grown in countries such as Iran, Greece, Australia, Afghanistan, Chile, South Africa. Turkey (17,300 tons) and the United States (California, 12,300 tons) are the world's leading exporters of raisins. The largest amount of raisins is exported to countries such as Germany, Canada, Japan, France, Italy, Belgium [1-2].

To dry the grapes in the shade, it is necessary to prepare closed special drying areas. The sequence of receiving the product in the drying area, temporary storage, placement on trays should be clearly defined. Conditions should be created for hanging and drying grapes in the drying area. Black (raisin) and soup grapes and raisins. [1-2] in the drying area. Black (raisin) and soup grapes and raisins. [1-2]

Grapes contain all the vitamins of group B, vitamins E, A, RR, K, C and D. Grapes also contain micro and macronutrients such as iron, copper, potassium, calcium, magnesium, zinc, boron, vanadium, aluminum, molybdenum, selenium, titanium, cobalt, radium, chlorine, silicon and sulfur. Grapes contain water, glucose, pectin, protein, carbohydrates, saturated and unsaturated fatty acids, essential oil and dyes [1-2].

When grapes are used in medicine, the phytosterols in the peel contain antioxidants against cancer and other serious diseases. In addition to a number of vitamins, it also contains mineral salts. With the help of these substances, the human body is always light and free from infections. Grapes have the property of expelling any infection that enters the human body as a cleansing agent in medicine. Its antiseptic properties protect a person from poisoning. The reason why grapes are recognized by world doctors is that they have expectorant, diaphoretic, detoxifying and anti-infective properties, kill bacteria, break down stones in the body and stop bleeding. In inflammation of the colon is recommended to drink a glass of grape juice a day. Drinking a glass of grape juice 4 times a day helps to urinate. Grape leaf tincture normalizes blood sugar levels. Therefore, the role of grapes in the prescription of a patient with diabetes is special, and treatment with grapes and its juice puts an end to anorexia. It is an effective remedy against insomnia, anemia, kidney disease, neurosis and metabolic disorders in the body. The most useful variety of grape is black currant, which is recommended for anemic and frail people. Even cancer patients are prescribed black grapes or raisins as a means of boosting immunity.

The chemical composition of grape juice increases its strength due to the presence of beneficial substances such as fructose, glucose, sucrose, raffinose, xylose. Grapes are prescribed for consumption in diseases such as anemia, cardiovascular disease, chronic hepatitis. It is also recommended to consume grapes in diseases of the gastrointestinal tract, acute and chronic nephritis, neurosis. Those who have kidney stones or sand will get rid of it if they regularly eat grapes and drink their juice. Drinking grape juice is useful for colds and asthma in the respiratory tract. Because he gets a cold [1-3].

Grape seed oil contains many elements: bioflavonoids, vitamins E and C, zinc and selenium. This oil contains a strong natural antioxidant that increases the flexibility of the lymphatic vessels. It also prevents the buildup of cholesterol in the body. Another feature of grapes is that it cures hypertension that has just begun in the body. Drinking a teaspoon of grape seed oil every morning cures cardiovascular disease, atherosclerosis and arthritis. This oil also has the property of boosting immunity. This helps prevent various infectious diseases. The oil obtained from grape seeds nourishes the body with unsaturated fatty acids, enzymes, chlorophyll, potassium, sodium and iron. This oil helps people get rid of strokes, heart attacks, thrombosis and couperosis. This wonderful tool is also used in the treatment of inflamed joints, bruises, cuts and burns, wounds that are difficult to heal. Black grape juice increases the strength of pregnant women and improves blood circulation in the body. This immune-boosting tool also properly shapes the heart activity of the unborn child. For this, it is more beneficial to consume freshly picked grapes [1-3].

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strength of pregnant women and improves blood circulation in the body. This immune-boosting tool also properly shapes the heart activity of the unborn child. For this, it is more beneficial to consume freshly picked grapes [1-3]. Dried (raisins) made from grapes are high in calories, rich in glucose (65-80%), which is quickly assimilated by the body. Due to the high content of resveratrol in grape skins and seeds, it has the ability to fight cancer. Due to its anti-inflammatory properties, it can easily treat the onset of breast cancer, colon and rectal cancer. Raisins are a medically very high-calorie product that is used in anemia, weakness, decreased immunity, and nervous tension. Raisins are more healing than fresh grapes. White raisins strengthen nerve fibers and cleanse the intestines of toxins and infections, while black grapes are the most beneficial remedy for nervous tension, calming the nerves and relieving fatigue. [3-4].

Chemical composition and energy content of dried raisins: 77% of dry matter, 61.0% of carbohydrates, 1.5-2.5% of nitrogen, 1.9-2.2% of ash, contains vitamins necessary for the human body. 1 kg of raisins has 2400-3250 calories of energy. The sugar content of grapes harvested for the preparation of raisins should not be less than 23-25%. If the sugar content of grapes is less than 1% of the condition, then 1.5-2 quintals less raisins are obtained from each hectare of vineyard.

Dried grapes must be clean and evenly ripened. Raisin products can be obtained by drying all kinds of grapes rich in juice and seedless grapes. Raisins are obtained mainly from black seedless grapes, which are widely consumed, and raisins from low-seeded grapes. Of the seedless grape varieties, mainly white, yellow (soup) raisins and black raisins are widely used. From the seed varieties are used large-leaved sultan, rhizomat, nutmeg, husayni grapes. There are popular methods of drying raisins, which are listed below.

**The method of spreading drying in the sun** is open, the method of spreading drying (without treatment with boiling alkali) in areas where the sun shines well. This method is widely used in Urgut, Kattakurgan, Ishtikhon, Koshabat, Burgan, Jizmonsay districts of Samarkand region, Nurata and Khatirchi districts of Navoi region, Tasmachi, Altynabad, Navandak, Mirdosh, Uchkara collective farms, Parkent district of Tashkent region, as well as in Altynsay district of Surkhandarya region. mainly made from raisins (Fig. 2), mostly black (raisin) seedless grapes. Drying in this way takes 20-30 days. The area where the sun shines is leveled, the leveled land is leveled with straw mud 5-10 cm thick 7-8 days before pruning, and the irrigated land dries in 7-8 days. After 8-10 days of drying the tops of the grapes in the sun, the heads of the grapes are turned upside down. After the grapes have dried for 20-28 days, the raisins are hand-picked after sunset in the evening. Raisins are hard when dried and make a crackling sound. The raisins are then mixed with a stick, rubbed on the hands with gloves and separated from the sticks. The large raisins are removed, the raisins are cleaned (blown out) in a special fan (wind) and the raisins are gathered together and covered with ice to prevent evening dew. The raisins are at a level that makes a crackling sound until morning. Put the cellophane in a cellophane bag or box and seal the mouth well, because when the sun goes down, the raisins become soft, in such a soft state the raisins cannot be covered because the raisin juice comes out and sticks to each other. Raisins are good for storage for a year, and for the second year they need to be spread out in the sun, if stored in a room with a special refrigerator, they will last for 3-5 years. Any product has a shelf life, after which the taste changes and the composition changes [1-4].

**Objosh** method grapes are soaked in alkaline boiling water and spread in the sun to dry. In this method, mainly Kattakurgan, sultan, rhizamate, nimrang, large-grained grape varieties are dried. The drying time of grapes is 3-4 times shorter than that of raisins dried in the sun (without treatment with boiling alkali). Before drying, the grapes are sorted, placed in 2-3 kg sieves and immersed in a solution of 0.3-0.4% boiling alkali, ie sodium hydroxide (NaOH) for 4-5 seconds. 300-400 g of alkali is used for every 100 liters of water, after boiling the water for 7-8 minutes the grapes are soaked in sieves. This causes thin cracks in the thin skin of the grape seed and the waxy dust on the skin of the grape disappears. This ensures rapid evaporation of moisture from the fruit and speeds up the drying process. Baskets of grapes obtained in the pot are placed on the racks for a few minutes to allow the solution to drain, then spread on trays or in the field. Due to the fact that the finished raisins do not contain alkali, it reacts completely with the acids that enter from the cracks of the fruit skin and disappears. The reaction of alkali with acids results in the formation of very small amounts of organic salts that are harmless to the human body. The area where the sun falls is leveled, covered with ice and spread with alkali-treated grape heads on the ice. After 4-5 days, when the top of the grapes dries in the sun, the grape heads are turned over. After the grapes have dried for 13-15 days, in the evening, after sunset, they are mixed with raisin sticks and rubbed on the hands with gloves so that the raisins are separated from the stalks. Remove the large raisins, the raisins are cleaned (blown out) in a special fan (wind) and the raisins are gathered together and covered with ice to prevent evening dew. The raisins make a squeaky sound until the morning. They are put in a cellophane box and the mouth is tightly closed, because when the sun goes down, the raisins become soft. Raisins should be spread in the sun for a good second year of storage, if stored in a room with a special refrigerator at -10 -15 oC, they will stand for 3-5 years. The drying time of grapes is 13-15 days.

**Shtabell** In this method, mainly white grapes are dried and smoked with sulfur. Before smoking with sulfur, grape heads are immersed in a solution of 0.3-0.4% boiling alkali sodium hydroxide (NaOH) for 5-6 seconds. This causes thin cracks in the thin skin of the grape seed and the waxy dust on the skin of the grape disappears. Baskets of grapes obtained in the pot are placed on the grill for a few minutes to allow the solution to drain. Due to the fact that the finished raisins do not contain alkali, it reacts completely with the acids that enter from the cracks of the fruit skin and disappears. The grapes are then spread on special trays and collected in smoking rooms. White grapes are kept in a sulfur smoking room for 1-1.5 hours, pink grapes for 30-40 minutes, and it is recommended to burn 0.6-0.8

g of sulfur for each kg of grapes. Raisins are dried, separated from the straw, cleaned, boxed and stored according to the above methods. Drying time of grapes is 15-20 days.

Yellow raisins and black currants (raisins) are dried in special shade rooms. The shady method is dried in wind-swept buildings with a length of 6-8 meters, a width of 4-5 meters and a height of 3-3.5 meters in places where the wind passes and the sun does not fall directly on the vines. The wire is pulled parallel to the inside of the building, and the heads of the vines are hung on this wire and dried. After the raisins have dried, the building is cleaned of rubbish by rubbing it on the ice, removing the raisins from the wire and separating them from the large rags. The raisins are cleaned (blown) in a special fan (wind) and the raisins are collected in one place and boxed in a cellophane bag. When dried in this way, 20-22% of raisins are obtained. The drying period of grapes lasts 1.5–2 months.

A method of drying by hanging on a wire in the sun and then spreading it on the ground. This method is grown and widely used in Kattakurgan, Ishtikhon, Kushrobat, Burgan, Jizmonsay districts of Samarkand region, and in Nurata and Khatirchi districts of Navoi region, Tasmachi, Altynabad, Navandak, Mirdosh, Uchkara, community farms. In this method, the poles are hung on the wire, placing poles parallel to each other in the area where the sun falls well. When the grapes do not dry out completely, they form a long raisin. The rest of the work is continued as described above and the finished raisins are packaged. The drying period of grapes lasts 1-1.5 months. This raisin looks like a shady raisin and is of good quality. Офтобда симга илиб кейин ерга ёйиб қурутиш усули.

**DISCUSS THE RESULTS**

The purpose of determining the amount of macro and micro elements in dried raisins spread in the shade is to obtain biologically active additives in a natural capsule by soaking a certain amount of potassium iodine in raisins spread in the shade. This is a comparative study of the two products obtained by soaking potassium iodine in raisins with raisins spread in the first shade.

Let us now consider the absorption of potassium iodine in soybean dried raisins by placing 13.1 mg of potassium iodide (equivalent to 10 mg of iodine) in a 500 ml flat conical flask, dissolving in 300 ml of distilled water, and 100 g of soybean dried raisins. (128 pcs.) And left until the solution was saturated. The raisins were saturated in KI solution for 27 h. The raisins soaked in the KI solution were filtered out of the solution, washed three times with distilled water and weighed and weighed, the results are given in Table 3.

**Table 2**  
**Absorption of KI solution into raisins dried in the shade.**

Nº	Raisins Product names	Weight of raisins (mg / g) and the number of pieces	Raisin solution time taken for digestion (hours) 20°C	Raisins into KI solution saturation subsequent weight mg / gr	100 g of raisins soaked in KI solution m weight mg / gr	Weight of raisins after thorough drying is mg / g
1	Dried raisins in the shade	100 gr - 128 pieces	27	214,798	114,798	72,373

These soybean raisins have 5.24 mg KI per 100 g (128 raisins), which is equivalent to 4 mg of iodine. One soybean contains 0.040 mg of KI, which corresponds to 0.030 mg of iodine.

Methods for determining the content of macro and micro elements in raisins soaked in the shade and raisins soaked in potassium iodine «X-ray fluorescent spectrometer Spectro Xepos 111, technical specifications: 120 / 230V, power 150W. device (SSA). To do this, sample raisins and iodized raisins are crushed (chopped) separately, dried at room temperature for 2 weeks (for dehydration) in a place out of the sun. Weigh 5 g of dried raisins and iodized raisins separately, and 5 g of raisins for X-ray analysis in special containers, glued together (no additives are used for gluing, because dried raisins themselves become sticky at room temperature). Raisins are placed in separate containers on a disk with a circular shape. Each sample is analyzed by the device for 20 minutes. When the analysis of the results is complete. The results are automatically displayed on a computer connected to the device. The results of these studies are presented in Table 1.

**Table 1**  
**The amount of macro and micro elements in raisins and iodized raisins spread in the shade.**

Nº	Element	Naming	Sun-dried raisins Concentration in mg/g	Abs. Error	Element	Naming	Sun-dried iodized raisins Concentration in mg/g	Abs. Error
1	MgO	Magnesiumoxide	< 185	-	MgO	Magnesiumoxide	< 164	-
2	Mg	Magnesium	< 112	-	Mg	Magnesium	< 99	-
3	Al <sub>2</sub> O <sub>3</sub>	Aluminumoxide	29320	290	Al <sub>2</sub> O <sub>3</sub>	Aluminumoxide	5717	92
4	Al	Aluminium	15520	150	Al	Aluminium	3025	49
5	SiO <sub>2</sub>	Siliconoxide	72530	240	SiO <sub>2</sub>	Siliconoxide	12960	80

6	Si	Silicon	33900	110	Si	Silicon	6058	37
7	P <sub>2</sub> O <sub>5</sub>	Phosphorusoxide	7296	49	P <sub>2</sub> O <sub>5</sub>	Phosphorusoxide	2921	27
8	P	Phosphorus	3184	21	P	Phosphorus	1275	12
9	SO <sub>3</sub>	Sulfuroxide	5149	25	SO <sub>3</sub>	Sulfuroxide	3471	18
10	S	Sulfur	2062	10	S	Sulfur	1390	7
11	Cl	Chlorine	909.6	4.6	Cl	Chlorine	1570	5
12	K <sub>2</sub> O	Potassiumoxide	11900	10	K <sub>2</sub> O	Potassiumoxide	17500	10
13	K	Potassium	9880	8	K	Potassium	14520	10
14	CaO	Calciumoxide	1522	3	CaO	Calciumoxide	2223	4
15	Ca	Calcium	1088	2	Ca	Calcium	1589	3
16	Sc	Scandium	3.0	0.3	Sc	Scandium	< 0.5	-
17	Sc <sub>2</sub> O <sub>3</sub>	Scandiumoxyd	4.7	0.5	Sc <sub>2</sub> O <sub>3</sub>	Scandiumoxyd	< 0.8	-
18	TiO <sub>2</sub>	Titaniumoxide	61.5	0.4	TiO <sub>2</sub>	Titaniumoxide	557.6	1.4
19	Ti	Titanium	36.8	0.2	Ti	Titanium	334.2	0.8
20	V <sub>2</sub> O <sub>5</sub>	Vanadiumoxide	2.1	0.2	V <sub>2</sub> O <sub>5</sub>	Vanadiumoxide	< 0.4	-
21	V	Vanadium	1.2	0.1	V	Vanadium	< 0.2	-
22	Cr <sub>2</sub> O <sub>3</sub>	Chromiumoxide	0.9	0.1	Cr <sub>2</sub> O <sub>3</sub>	Chromiumoxide	< 0.1	-
23	Cr	Chromium	0.61	0.05	Cr	Chromium	< 0.1	-
24	MnO	Manganesoxide	14.3	0.2	MnO	Manganesoxide	20.5	0.2
25	Mn	Manganese	11.1	0.1	Mn	Manganese	15.9	0.1
26	Fe <sub>2</sub> O <sub>3</sub>	Ironoxide	284.1	1.6	Fe <sub>2</sub> O <sub>3</sub>	Ironoxide	445.8	1.9
27	Fe	Iron	198.7	1.1	Fe	Iron	311.8	1.3
28	Co <sub>3</sub> O <sub>4</sub>	Cobaltoxide	< 1.4	-	Co <sub>3</sub> O <sub>4</sub>	Cobaltoxide	< 1.4	-
29	Co	Cobalt	< 1.0	-	Co	Cobalt	< 1.0	-
30	NiO	Nickeloxide	8.9	0.2	NiO	Nickeloxide	6.2	0.2
31	Ni	Nickel	7.0	0.2	Ni	Nickel	4.9	0.1
32	CuO	Copperoxide	23.2	0.3	CuO	Copperoxide	23.4	0.2
33	Cu	Copper	18.6	0.2	Cu	Copper	18.7	0.2
34	ZnO	Zincoxide	11.9	0.1	ZnO	Zincoxide	9.6	0.1
35	Zn	Zinc	9.5	0.1	Zn	Zinc	7.7	0.1
36	Ga <sub>2</sub> O <sub>3</sub>	Galliumoxide	0.5	0.1	Ga <sub>2</sub> O <sub>3</sub>	Galliumoxide	0.4	0.1
37	Ga	Gallium	0.34	0.05	Ga	Gallium	0.29	0.05
38	GeO <sub>2</sub>	Germaniumoxide	0.3	0.1	GeO <sub>2</sub>	Germaniumoxide	< 0.4	-
39	Ge	Germanium	0.18	0.04	Ge	Germanium	< 0.3	-
40	As <sub>2</sub> O <sub>3</sub>	Arsenicoxide	1.0	0.1	As <sub>2</sub> O <sub>3</sub>	Arsenicoxide	0.4	0.1
41	As	Arsenic	0.8	0.1	As	Arsenic	0.3	0.1
42	SeO <sub>2</sub>	Seleniumoxide	6.7	0.1	SeO <sub>2</sub>	Seleniumoxide	3.8	0.1
43	Se	Selenium	4.8	0.1	Se	Selenium	2.74	0.05
44	Br	Bromine	0.41	0.03	Br	Bromine	0.43	0.03
45	Rb <sub>2</sub> O <sub>3</sub>	Rubidiumoxide	14.2	0.1	Rb <sub>2</sub> O <sub>3</sub>	Rubidiumoxide	14.1	0.1
46	Rb	Rubidium	11.1	0.1	Rb	Rubidium	11.0	0.1
47	SrO	Strontiumoxide	16.7	0.1	SrO	Strontiumoxide	23.3	0.1
48	Sr	Strontium	14.1	0.1	Sr	Strontium	19.7	0.1
49	Y <sub>2</sub> O <sub>3</sub>	Yttriumoxide	0.6	0.1	Y <sub>2</sub> O <sub>3</sub>	Yttriumoxide	2.8	0.1
50	Y	Yttrium	0.5	0.1	Y	Yttrium	2.2	0.1
51	ZrO <sub>2</sub>	Zirconiumoxide	0.8	0.1	ZrO <sub>2</sub>	Zirconiumoxide	4.5	0.1
52	Zr	Zirconium	0.6	0.1	Zr	Zirconium	3.3	0.1
53	Nb <sub>2</sub> O <sub>5</sub>	Niobiumoxide	0.4	0.1	Nb <sub>2</sub> O <sub>5</sub>	Niobiumoxide	6.1	0.1
54	Nb	Niobium	0.3	0.1	Nb	Niobium	4.3	0.1
55	MoO <sub>3</sub>	Molybdenumoxid	< 0.4	-	MoO <sub>3</sub>	Molybdenumoxid	7.4	0.2
56	Mo	Molybdenum	< 0.2	-	Mo	Molybdenum	4.9	0.1
57	Ru	Ruthenium	< 0.1	-	Ru	Ruthenium	< 0.1	-
58	Rh	Rhodium	< 0.1	-	Rh	Rhodium	0.10	0.01
59	Pd	Palladium	< 0.1	-	Pd	Palladium	< 0.2	-
60	Ag <sub>2</sub> O	Silveroxide	< 0.2	-	Ag <sub>2</sub> O	Silveroxide	< 0.2	-
61	Ag	Silver	< 0.2	-	Ag	Silver	< 0.2	-

62	CdO	Cadmiumoxid	< 0.2	-	CdO	Cadmiumoxid	2.2	0.1
63	Cd	Cadmium	< 0.2	-	Cd	Cadmium	2.0	0.1
64	In <sub>2</sub> O <sub>3</sub>	Indiumoxide	< 0.4	-	In <sub>2</sub> O <sub>3</sub>	Indiumoxide	6.9	0.2
65	In	Indium	< 0.3	-	In	Indium	5.7	0.1
66	SnO <sub>2</sub>	Tinoxide	< 0.5	-	SnO <sub>2</sub>	Tinoxide	88.4	0.9
67	Sn	Tin	< 0.4	-	Sn	Tin	69.6	0.7
68	Sb <sub>2</sub> O <sub>5</sub>	Antimonyoxide	< 2.2	-	Sb <sub>2</sub> O <sub>5</sub>	Antimonyoxide	687.9	4.0
69	Sb	Antimony	< 1.7	-	Sb	Antimony	517.8	3.0
70	TeO <sub>2</sub>	Telluriumoxide	< 0.6	-	TeO <sub>2</sub>	Telluriumoxide	67.0	0.8
71	Te	Tellurium	< 0.5	-	Te	Tellurium	53.6	0.6
72	I <sub>2</sub> O <sub>5</sub>	Iodineoxide	2.9	0.6	I <sub>2</sub> O <sub>5</sub>	Iodineoxide	13830	10
73	I	Iodine	2.2	0.4	I	Iodine	10510	10
74	Cs	Cesium	< 0.1	-	Cs	Cesium	< 0.1	-
75	BaO	Bariumoxide	2.4	1.2	BaO	Bariumoxide	< 1.1	-
76	Ba	Barium	2.2	1.1	Ba	Barium	< 1.0	-
77	La <sub>2</sub> O <sub>3</sub>	Lanthaniumoxide	< 1.8	-	La <sub>2</sub> O <sub>3</sub>	Lanthaniumoxide	146.7	3.2
78	La	Lanthanium	< 1.5	-	La	Lanthanium	125.1	2.7
79	CeO <sub>2</sub>	Ceriumoxide	< 0.4	-	CeO <sub>2</sub>	Ceriumoxide	170.2	2.5
80	Ce	Cerium	< 0.3	-	Ce	Cerium	138.6	2.0
81	Pr <sub>6</sub> O <sub>11</sub>	Prasiodymoxid	< 0.4	-	Pr <sub>6</sub> O <sub>11</sub>	70.3	116.0	2.3
82	Pr	Praseodymium	< 0.3	-	Pr	Praseodymium	96.0	1.9
83	Nd <sub>2</sub> O <sub>3</sub>	Neodymiumoxide	< 0.2	-	Nd <sub>2</sub> O <sub>3</sub>	Neodymiumoxide	< 0.2	-
84	Nd	Neodymium	< 0.2	-	Nd	Neodymium	< 0.2	-
85	Sm <sub>2</sub> O <sub>3</sub>	Samariumoxide	< 0.6	-	Sm <sub>2</sub> O <sub>3</sub>	Samariumoxide	< 1.7	-
87	Yb <sub>2</sub> O <sub>3</sub>	Ytterbiumoxide	< 0.5	0.5	Yb <sub>2</sub> O <sub>3</sub>	Ytterbiumoxide	0.6	0.5
88	Yb	Ytterbium	1.4	0.4	Yb	Ytterbium	0.5	0.4
89	HfO <sub>2</sub>	Hafniumoxide	1.2	0.2	HfO <sub>2</sub>	Hafniumoxide	1.2	-
90	Hf	Hafnium	0.8	0.2	Hf	Hafnium	1.0	-
91	Ta <sub>2</sub> O <sub>5</sub>	Tantalumoxide	0.7	-	Ta <sub>2</sub> O <sub>5</sub>	Tantalumoxide	3.1	-
92	Ta	Tantalum	2.2	-	Ta	Tantalum	2.6	-
93	WO <sub>3</sub>	Tungstenoxide	1.8	0.3	WO <sub>3</sub>	Tungstenoxide	0.6	-
94	W	Tungsten	0.6	0.2	W	Tungsten	0.5	-
95	Re	Rhenium	0.5	0.0	Re	Rhenium	0.5	-
96	Os	Osmium	0.6	-	Os	Osmium	0.4	-
97	Ir	Iridium	0.5	-	Ir	Iridium	0.2	-
98	Pt	Platinum	0.2	-	Pt	Platinum	0.5	-
99	Au	Gold	0.5	0.1	Au	Gold	0.8	0.1
100	HgO	Mercuryoxide	1.2	-	HgO	Mercuryoxide	0.2	-
101	Hg	Mercury	0.2	-	Hg	Mercury	0.2	-
102	Tl	Thallium	0.2	0.03	Tl	Thallium	0.12	0.03
103	Tl <sub>2</sub> O <sub>3</sub>	Thalliumoxide	0.14	0.03	Tl <sub>2</sub> O <sub>3</sub>	Thalliumoxide	0.14	0.03
104	PbO	Leadoxide	0.15	0.1	PbO	Leadoxide	4.2	0.1
105	Pb	Lead	5.3	0.1	Pb	Lead	3.9	0.1
106	Bi <sub>2</sub> O <sub>3</sub>	Bismuthoxide	4.9	-	Bi <sub>2</sub> O <sub>3</sub>	Bismuthoxide	0.3	-
107	Bi	Bismuth	0.2	-	Bi	Bismuth	0.3	-
108	ThO <sub>2</sub>	Thoriumoxide	0.9	0.1	ThO <sub>2</sub>	Thoriumoxide	1.10	0.05
109	Th	Thorium	0.76	0.04	Th	Thorium	0,97	0.04
110	U	Uranium	0.40	0.03	U	Uranium	2,4	0,1

## EXPERIMENT SECTION

1. Dissolve 13.1 mg of potassium iodide (equivalent to 10 mg of iodine) in a 500 ml flat conical flask, dissolve in 300 ml of distilled water, add 128 g of black raisins dried in the shade and leave until the raisin solution is saturated. The raisins were saturated in KI solution for 27 h. Raisins soaked in KI solution were filtered out of the solution, washed three times with distilled water and weighed, weighed 214,798 g of raisins, and 180 ml of KI solution increased from raisin saturation, the amount of potassium iodide absorbed in raisins was calculated in the discussion of results and 100 g of soy 128 raisins) have 5.24 mg of KI, which corresponds to (4 mg of iodine). One soybean raisin contains 0.040 mg of KI, which corresponds to 0.030 mg of iodine.

2. Add 13.1 mg of potassium iodide (equivalent to 10 mg of iodine) to 500 ml of a flat conical flask, dissolve in 200 ml of distilled water, add 100 g of sun-dried black raisins and leave until the raisin solution is saturated. The raisins were saturated in KI solution for 27 h. The raisins soaked in the KI solution were filtered out of the solution, washed three times with distilled water and weighed. The raisins weighed 212,228 g and the KI solution exceeded the saturation of the raisins. 90 ml of potassium iodide absorbed in the raisins were calculated in the discussion section. raisins) has a KI of 7.205 mg, which corresponds to 5.5 mg of iodine. One sunflower raisin has 0.043 mg of KI, which is equivalent to 0.032 mg of iodine [4-6].

### CONCLUSION

1. A method of obtaining a capsule biologically active supplement based on natural raisins, which provides the body with iodine in the treatment of endocrine diseases caused by iodine deficiency, has been developed. was better to consume.
2. Add a certain amount of potassium iodide solution from black raisins dried in the shade and measure how much potassium iodide solution is absorbed. It contains 5.24 mg of KI per 100 g of soy raisins (128 raisins), which corresponds to 4 mg of iodine. One soybean has 0.040 mg of KI, which corresponds to 0.030 mg of iodine (0.030 mg of iodine).

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