

Preparation Of Prophylactic And Therapeutic Dietary Preserves On The Basis Of Caper Fruits

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Abstract: *Capparis Spinosa L. is a medicinal plant and is used in the treatment of various diseases from canned products prepared in combination with its processed fruit buds, processed fruits and other ingredients considered dietary. The technology of dietary canned food made on the basis of caper fruit, which has therapeutic and prophylactic properties, has been developed, the chemical composition has been determined, and safety has been ensured. On the basis of theoretical studies, regimes of complete killing of microorganisms that spoil the caper and make it unfit for consumption have been found, optimal parameters of the sterilization process have been recommended. The optimal technology of canning capers is proposed.*

Keywords: *Dietary canning, glycosides, cholesterol, dried tomatoes, pickling, marinade, acetic acid, recipe, regimen.*

In the canning industry, scientific research is being conducted on the use of non-traditional raw materials in the production of medicinal and dietary products, the creation of new ingredients and modern technologies. The field focuses on the creation of canned products based on the dietary component of plants that contain components with special properties, including *Capparis Spinosa L.* (capers). In this regard, research is being conducted to create and apply new technologies in production, to obtain high quality products, to focus on measures to preserve and increase the biological richness of products, the efficient use of natural raw materials and products. There are steppes and deserts in the regions and districts of the country, and today they are almost not used. In order to increase the economic efficiency of lands with such conditions, a number of research works are being carried out in 2009-2020 for the planting and industrial use of drought-resistant plant species. In particular, a project was developed to grow the cultivar "*Capparis spinosa L.*" in the steppes and deserts of the cultural variety "Uzbekistan-20", which studied its agrobiological properties, chemical composition, importance in the food and pharmaceutical industries. "*Capparis Spinosa*" contains 27 mg of iodine and various vitamins (A, E, C), which can be used in the manufacture of medicinal, exported canned food, fruit peels and capsule powders.

The chemical composition of the plant is poorly understood, so little is known about it. Its chemical composition is being studied by scientists of NamMTI and the leading scientific research institute of the republic. According to some sources, it contains 0.32-0.35% of rutin, 130-150 mg% of C, R, E and other vitamins, 12% of sugar, 18-20% of flavones, 29-30% of glycosides. The seeds contained 35-36% fat, the buds 25% protein and the fruit 27-30 mg of iodine. When analyzed on the basis of these features, it became clear

that it really needs to be widely used for the prevention and treatment of various diseases (Table 1).

The general chemical composition of kavar fruit
amount of substances, mg,%

Table 1

Chemicals	The average amount	grown naturally	grown culturally
Routine	0,32	0,29	0,35
Vitamin S	1,50	1,47	1,54
R	1,36	1,31	1,40
E	1,28	1,26	1,30
Quartzetin	0,43	0,39	0,48
Sugars	8,12	8,0	12,0
Glycosides	21-29	21,0	29,0
Seed oil	36	34,0	37,0
Protein	25,0	24,0	26,0
Iodine (in 100 grams of dry mass)	27 mg	24,0	29,0

As a result of folk medicine data and research, the tincture prepared from the root can be used to treat diseases, neurosis, paralysis and trauma. Flowers and leaves are used in the treatment of rashes, salivary glands, otitis media, skin wounds and white spots on the body; Buds - in the treatment of diseases of the liver and spleen; fruit - in the treatment of diseases of the teeth, gums, epilepsy, paralysis, hemorrhoids and goiter; bark - in the treatment of asthma and gastrointestinal diseases; The seeds - can be used as a natural remedy in the treatment of gastrointestinal diseases, worms and white spots on the body.

The use of caper products increases the activity of the immune system, increases resistance to external conditions and the activity of the organism. In patients who consumed the seeds, the absence of white spots on the body was observed due to the elimination of forms of worms tramatod, cestoda and nematode, as well as the mobile forms of lamblia. Infusions made from the vegetative parts of *Capraris Spinosa*, especially canned food, recommend the following recipe for the treatment of diabetes, liver disease, rheumatism, toothache, gum disease. Dip 20 g of capers root or fruit in 200 ml of water and cook on low heat for 15 minutes, then cool the decoction, strain and drink 3 tablespoons of 1 tbsp. Pharmacological studies have shown that drugs prepared from different parts of plants are highly effective against allergies. Juice from fresh fruits is recommended for the treatment of basedow disease. Capers attract pollinating and honey-picking insects in nature because they bloom so gracefully and beautifully. Bee honey in particular contains very small amounts of caper plant particles, many of which are widely used in the treatment of respiratory and gastrointestinal diseases. Kavar roots are also rich in various medicinal substances, including glycosides called caparidine. The leaves and bark are rich in glycosides called stachidrin. The chemical composition of the various organs of the cavities is peculiarly formed. For example, their fruits contain up to 12% of sugars, up to 0.32% of rutin, 136 mg of ascorbic acid, thioglycosides, steroidal saponins, myrosin enzyme, red pigment, iodine. Flower buds contain

21-29% of protein. 3.5-4.6% of fats are found in combs. These fats are mainly composed of triglycerides, which are mainly unsaturated fatty acids such as sterols palmitin, olein and others. In particular, the importance of rutin, which acts as an antioxidant in the body, is very high.[1]

Routine stabilizes all oxidative processes in the body, participates in the management. Provides pupil activity and visual energy. It is directly involved in all optical processes that take place in the eye. The amount of rutin antioxidant in flower buds is 0.32%. Ascorbic acid, which is not synthesized in the body and is obtained only from food, is the main antioxidant of the body. Vitamin C enters the body mainly through food.

The amount of ascorbic acid found in caper flower bowls is 150mg%. It is known that pectins are a sanitary or adsorbent of all metabolic processes in the body. Due to the high hydraulic properties of pectins and dietary fiber salts, they accumulate and remove excess water from the products and the body. They also have the ability to absorb nitrogen toxins formed in protein biosynthesis, as well as radionuclides formed in metabolism. Caper flower bowls and combs contain 0.5-1.5% pectin, which can be used as food additives. The seeds of capers contain a large amount of semi-dry fats, the content of which reaches 26-36%. Especially fully ripened seeds contain a lot of fat, the amount of which is 36-48%.

Proteins act as building materials in the synthesis of components of new cells of living organisms. This is because proteins are made up of exchangeable and non-exchangeable amino acids. In particular, non-exchangeable amino acids play an important role in food production technology and enter the body mainly along with food. The presence of essential amino acids in caper flower buds and buds further enhances their ability to produce a variety of food products, including canned food or canned food as biological additives. They contain 18% protein in the seeds. The importance of vitamins as biological catalysts in living organisms is incomparable. Thus, the content of various B group vitamins in caper flower buds occurs within the following limits. B1-0.018mg, B2-0.139mg, A-83mgk, E-0.88mg, K-24.6mgk, PP-0.652mg, B6-0.023mg, B5-0.027mg, S-43mg, B4-65mg .

Caper fruits contain a complex of macro-and micronutrients that form the centers of activity of coenzymes and enzymes involved in biochemical processes in the body. Because they enter the body mainly through food, their source is fruits and vegetables, greens and supplements. [4]

Considering all the medicinal properties of the caper plant mentioned above, we will consider the preparation of several different dietary canned products.

1. RESULTS OF EXPERIMENTS MARINATED BY ADDING EQUAL AMOUNTS OF CAPERS AND DESICCATED TOMATOES.

In order to further increase the nutritional value and organoleptic properties of canned caper plant in this experiment, it is planned to develop a technology for adding desiccated tomatoes as an ingredient in the canning process.

The purpose of this is to increase the nutritional value of caper plant, as well as the abundance of macro and micro elements in the chemical composition of tomato desiccated, such as cellulose, B vitamins, vitamin C, folic acid, potassium, sodium, phosphorus, magnesium, calcium, iron, which are necessary for human health. allows consumption as a canned product.

Another distinctive feature of tomato desiccated is the choline content it contains. It lowers blood cholesterol, produces new hemoglobin, and strengthens the immune system. It also helps to lose weight and protects the upper tissues of the heart and liver from the

accumulation of fat, which further enhances the nutritional and pharmacological properties of canned caper fruit.

The following additional ingredients are also used in the preparation of 400 g of canned food with this complex composition. Marinated capers 150 g, desiccated tomatoes 150 g, crushed pepper tincture, black pepper grains 10-12 pieces, Cinnamon 25 g, 4 cloves of garlic, bay leaf 4-6 leaves, 30 ml of olive oil.

After the selection of the above additional ingredients, the technological process is organized in the following order:

Marinated capers are washed in running water and add 150 g of crushed peppercorns to 1 liter of water for boiling marinade and boil for 15 minutes at 100 degrees. Prepare a solution by adding 30 g of salt and 50 g of sugar to the melted tincture. The purpose of making a sugar solution is to increase the energy value of the marinade along with softening the pungent sour taste of the marinades. A solution of acetic acid can also be used to eliminate the pungent sour taste of the marinade, but the use of a sugary solution in this process also serves to increase the flavor of the product.

The conditioned jars are then sterilized, filled with garlic, spices, bay leaves, desiccated tomatoes and capers in order, first poured olive oil, then marinade solution, and the lacquered lids are tightly closed and sterilized at 100°C for 20 minutes. After completion of all technological processes, it is recommended to store packaged ready-made marinades in moderately ventilated rooms with a temperature of 5-10°C and a relative humidity of 70-85%. The use of desiccated tomato as an ingredient in the preservation of capers allows to obtain a finished product enriched with macro and micro elements such as vitamins, folic acid, potassium, sodium, phosphorus, magnesium, calcium, iron, which are necessary for human health, and has high organoleptic properties and preservation. It is recommended to pack this type of product in 500 g glass jars. This facilitates storage, transportation, marketing and consumption of the product. [8]



Figure 1. Dietary canned food made from desiccated tomato and caper plant.

2. RECOMMENDATIONS FOR CANNING PICKLED CAPERS.

Cultivated product is washed, inspected, placed in 0.5-1.0 l glass jars according to the recipe, poured 5% saline solution, sealed with a lid and sterilized according to the formula 30-14-28 / 108 for 20-25 minutes. The finished product is cooled and sent to warehouses for storage (Figure 2, Table 2). [2]



Figure 2. Sample of canned product in a 1-liter jar

Table 2

Kaper canning recipes		
Raw materials and ingredients	Quantities, %	For containers with a capacity of 1 l, g
Caper fruit	65	650
Dill	0,15	1,5
Garlic	1,0	10
Bell peppers	4-5	50
Bay leaf	0,02	0,2
Black pepper	0,01	0,1
Salt	0,8	8,0

3. RECOMMENDATIONS FOR MARINATING CAPER BERRIES WITH THE ADDITION OF HERBS AND SPICES.

Spices - celery and other herbs were used to eliminate the unpleasant odor and taste of capers. Because garlic is rich in flavanoids and phytoncides, it has been used to enrich the chemical composition with these substances and in part as an antioxidant. Black pepper grains were used to give the product a delicate aroma. Acetic acid was used as a chemical preservative. To find the optimal amount of components, we first set ourselves the goal of determining the optimal amount of fruit needed for 1-82-400 jars. Therefore, a wide range of quantities of fruits from 100 g to 350 g were tested in different variants with a 0.3% change in the concentration of the main marinade component. The organoleptic properties of canned or marinades prepared from 100 g to 200 g of fruit components were not at the required level, ie

the proportion of canned marinades and fruits was lost. When the amount of fruit was doubled, it was slightly bitter in the finished product due to the low percentage of filling in the jar, and the fruit lost its elegance. Therefore, marinating from these options according to the composition of the fruit was not considered expedient. Extraction of salt in the amount of 15 g of liquid filling creates a concentration of 3%. According to many years of research and experiments in fruit and vegetable canning technology, osmotic microorganisms formed in plant cells at a concentration of 1.5–2% of table salt in the filling are higher than the osmotic pressure of the cells and prevent their development. However, due to the fact that the capers in our experimental conditions are rich in biological nutrients, the above conclusion was reached after serious biotechnological calculations, taking into account the probability of development of osmoterant microorganisms, and the optimal concentration of osmotic acid was set at 3%.

The use of vinegar, which is one of the chemical preservatives, was set at 0.8 ml. Because the concentration of 1.5–2% water and other organic acids, the development of putrefactive microorganisms is stopped. Because the enzymes involved in their cell wall synthesis are completely inactivated, the cell membrane of microorganisms is not formed and all the protein structures present in its cytoplasm are denatured. As a result, the biological cell dies. Based on the above and the results of the experiment, the optimal recipe option is option 3, which includes 200 g of capers, 4 g of salt, 13 g of herbs, 2 cloves of garlic, 5 peppercorns and 0.8 for 4-82-400 jars. ml of acetic acid.

Selection of the optimal sterilization mode of canned marinated capers (for 1-82-1000 jars)

Table 3

Sterilization duration, min	Storage temperature and duration	Note
5	22°C-22 days	Bank bombing was observed due to the development of vegetative forms of microorganisms, mainly in the formation of mud sediments
8	22°C-Less than 2 months	In the first period, a clear, then muddy sediment is formed, and a bombardment of the jars was observed
10	22°C-More than 6 months	Stable clarity and no changes were observed
15	22°C-More than 7 months	Stable clarity and no changes were observed
20	22°C-More than 9 months	Stable clarity and no changes were observed
30	22°C-1 year	Stable clarity and no changes were observed

The optimal recipe for canned pickled capers after dehydration of the marinade is given in options 2 and 3, and can be 1545-1550 g of product if the capers are dehydrated to 55% humidity in jars 1-82-1000. Reducing the moisture content of the fruit by 35% allows you to place up to 2000 g of native fruit in the jar. The amount of salt in the jar is 30 g in the 2nd variant in proportion to the mass of the caper, and in the 4th variant in the ratio of 30-45 g depending on the weight of the product. proved to be Option 2 salted capers were observed to regenerate rapidly as a result of washing with water before applying their elegance, the cells became tense and their organoleptics improved. 4In variant 4, the same situation was repeated. Observations in the remaining variants of the experiment showed that drying of up to 14% of the fruits of the first variant did not require the addition of salt. Because no change was observed in the product, which was stored for a long time at 14% humidity without salt. When drying and salting the fruits to 25% humidity, it was observed that their roughness

violates the organoleptics. It was observed that the appearance of discoloration of dehydrated fruits up to 75% humidity changes under the influence of microorganisms and makes them unfit for consumption. Thus, dehydration of caper fruits up to 55% and then salting proved to be the optimal option.

4. CONCLUSION

One way to ensure optimal longevity in the preservation of capers is to store them in the cell sap separated from them by creating an excess osmotic pressure in the cells using the maximum concentration of salt. The optimal acidity variant of canned capers is kamnordon marinades, in which it is desirable that the concentration of organic preservative acetic acid be 0.3%. The optimum temperature for sterilization of canned marinated capers is 98-100°C, the duration of sterilization is 10 minutes. The shelf life of canned marinated capers is 12 months. Consumption of canned capers by creating high osmotic pressure in the cells using table salt and shelf life without changing their organoleptic properties is 12-14 months. Canning *Capparis spinosa* L-plant, which retains its dietary properties in other species, especially with dried tomatoes, also serves to increase the value of the product.

5. REFERENCES

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