



CURRENT STATE OF FRUIT AND VEGETABLE JUICE PRODUCTION

Khabibov F.Yu. ¹

Niyazov Kh.Kh. ²

Ismatova A.A. ²

¹ Bukhara Engineering and Technology Institute

² Bukhara Institute of Natural Resources Management of the National
Research University of Tashkent Institute of Irrigation and Agricultural
Mechanization Engineers

<https://doi.org/10.5281/zenodo.8012176>

Аннотация.

Соки вырабатывают практически из всех видов плодов и ягод как культурных, так и дикорастущих. Наибольший удельный вес в мировом производстве соков принадлежит яблочному соку, на втором месте виноградный сок. В последние годы получило развитие производства соков из субтропических плодов - цитрусовых и гранатов. Технология и техника производства каждого из этих соков имеет свои особенности.

Annotation.

Juices are produced from almost all types of fruits and berries, both cultivated and wild. The largest share in world juice production belongs to apple juice, grape juice is in second place. In recent years, the production of juices from subtropical fruits - citrus fruits and pomegranates - has been developed. The technology and technique of production of each of these juices has its own characteristics.

INTRODUCTION: The economic development of sovereign Uzbekistan, the transition to market relations require an improvement in the food supply of the republic based on the intensification of the production of agricultural raw materials, increasing its efficiency and the comprehensive development of the sectors of the national economy engaged in processing, storing and bringing these valuable food products to the consumer with minimal losses. Therefore, it is no coincidence that one of the ten fundamental, most important problems of the UN is the issue of improving the structure of nutrition for disease prevention.

It is well known that fruits are important sources of a number of mineral elements, contain water-soluble sugars, organic acids, fiber, pectin and protein substances. The bactericidal and medicinal properties of many fruits have also been revealed. These diverse qualities of fruits make them an essential part of the human diet.

In the economic independence of the Republic of Uzbekistan, a special place is occupied by the processing of agricultural crops and products from it. The government of the republic pays special attention to improving the quality of products in the food industry, and especially products from fruits and vegetables grown in the republic, which allow ensuring the exportability of these products, competing in the world market with the products of other developed countries. It is by improving the quality of products at the stage of processing that it is possible to move from a state of a raw material appendage to a state that is exportable and competes on an equal level in the world market for these goods. In our sovereign state, the fulfillment of the main economic task is connected with the use of the achievements of

modern science and technology, which contribute to the growth of the productive forces of society, to the improvement of the structure of production and its efficiency.

Dietary juices are an important element of food in the human diet, because along with fresh fruits and vegetables, they provide the human body with a set of all physiologically active substances - vitamins, macro- and microelements, polyphenols and many others necessary for normal human life.

The human body can only exist if there is a constant exchange of nutrients and water. Water exchange and related physiological and biochemical processes are extremely important for human life. It is known that without food a person can live for more than a month, and without water only a few days.

Fruit juices and natural drinks based on them, covering the body's need for water, at the same time have nutritional value. In order to satisfy the body's need for water and quench thirst, juices and drinks must have a certain physiological effect on the body, which depends on their refreshing ability, nutritional value, stimulating effect, harmonious taste and smell, and other properties. Fruit and vegetable juices, containing in their composition flavoring and nutrients, fully meet these requirements.

From a physiological point of view, fruit and vegetable juices can be classified as nutritional drinks. They contain various food and biologically active substances and are a good source of water. Pulp juices contain most of the nutrients found in the original raw material.

Juice consumption is constantly increasing all over the world. This is explained by both the high nutritional value and the profitability of their production. The USA, CIS countries, Italy, Germany, Bulgaria, France and Switzerland produce the largest amount of juices. The maximum level of fruit juice consumption per capita in the USA was 27 liters per year, in Switzerland - 24, in Sweden and in the Netherlands - 19 liters each. The consumption of juices is provided both by the own production of individual countries and by their import from other countries. Citrus juices are especially imported in large quantities, on the basis of which various blended juices and drinks are prepared.

Juices with pulp occupy a special place among fruit juices. In terms of chemical composition, nutritional value and organoleptic qualities, they are closest to fresh fruits and berries. These are wonderful refreshing drinks that can be used in the same way as a dessert, and for preparing various culinary dishes - mousses, jelly, fruit porridge, etc. Juices with pulp contain all soluble and insoluble nutrients and vitamins of fresh fruits and berries and therefore they are rightly called "liquid fruits".

Currently, juices with pulp are produced from many types of fruits and berries - apricots, plums, cherries, apples, peaches, citrus fruits, black and red currants, gooseberries, cranberries, lingonberries, blueberries, blueberries. The specific requirements for the quality of juices with pulp, the preservation of the natural properties (color, aroma, taste) of fresh fruits and the presence of a homogeneous non-separating consistency make the task of obtaining these juices more difficult than the production of clarified juices.

This task is even more complicated by the fact that the pulp particles contain dispersed cell components and colloidal solutions of substances that serve as carriers of enzymes. Therefore, juices with pulp contain more enzymes, including oxidative ones, than clear juices, and as a result, during storage and production, they can be more oxidized and their color and aroma can change.

Juices with pulp can be natural or with added sugar or sugar syrup, homogenized or non-homogenized.

In homogenized juices, the fruit pulp is finely crushed with the help of special machines - homogenizers or disintegrators, which helps to keep the pulp in suspension in juices for a long time.

In the production of non-homogenized juices, only rubbing of fruits is used, particles of pulp are obtained; - they turn out to be larger and quickly settle, which leads to separation of the juice into two fractions - a clear liquid settles in the upper part, and pulp particles settle in the lower part. This juice must be shaken before drinking. Only apricot and citrus juices with pulp are produced not homogenized.

In the production of homogenized juices, one of the main tasks is to stabilize the pulp in suspension.

METHODS: In order for the pulp particles to remain suspended in the juice, the liquid phase must have sufficient viscosity, and the particles must be as crushed as possible. There are several ways to stabilize juices with pulp:

- a) *mechanical grinding of the pulp to a finely dispersed state;*
- b) *increasing the specific gravity of the liquid phase by adding stabilizing agents;*
- d) *the use of heat treatment to facilitate the transition of colloidal substances from the pulp into the juice and the inactivation of enzymes;*
- e) *a combination of these methods.*

Juices are produced from almost all types of fruits and berries, both cultivated and wild. The largest share in world juice production belongs to apple juice, grape juice is in second place. In recent years, the production of juices from subtropical fruits - citrus fruits and pomegranates - has been developed. The technology and technique of production of each of these juices has its own characteristics.

Apple juice: Apples for the production of juices on the line made in Bulgaria are stored in bins at the raw material site, from where they are taken by a hydraulic conveyor to a separator, where washing water is separated from them. The amount of raw material fed into the separator is regulated by a screw dispenser. After the separator, the apples enter the vertical elevator hopper, which loads them into a drum washing machine for pre-washing. From the machine, the apples go to the second washing and sorting machine, where the final washing and manual inspection of the apples is carried out. Selected poor-quality fruits and impurities are removed by a belt conveyor, and good-quality raw materials are loaded into a knife crusher and crushed into particles of 3-5 mm in size.

The crusher has a cylindrical body with longitudinal channels for the installation of knives, which are toothed strips of stainless steel sheet. Inside the case, a rotor in the form of a three-arm star rotates. Apples are loaded into the hopper of the machine and fall into a cylindrical body, where they are crushed under the action of a rotating rotor and fixed knives.

The crushed mass is thrown by centrifugal force onto the walls of the body and exits the machine through the holes in them. The pulp is collected in a tank, from where it is fed to the PM press by a screw pump. The pressed juice is collected in a tank with a capacity of 3 m³, and the pomace is removed by a trough-shaped belt conveyor. From the collection tank, the juice is pumped by a pump through a light filter, where it is cleaned of large suspensions, after which it enters the separator with automatic sediment removal. The purified juice is collected

in a tank, from where a cooler is fed into the tubular pasteurizer, where it is heated to 90°C and cooled to 45°C, heated by steam and cooled by water.

The heated juice is pumped into the fermenter. When the juice passes through the pipeline, a suspension of the enzyme preparation is dosed into its flow by a dosing pump. The drug suspension is prepared in a separate collection. In the fermenter, the juice is kept with the preparation for 1-2 hours, after which it is pumped through the cooling section of the tubular pasteurizer and cooled to 25-15°C. To the chilled juice, directly into the pipeline through which it passes, a gelatin solution is supplied by a dosing pump, which is previously prepared in a collector with a heating surface and a stirrer. After adding the gelatin solution, the juice is again kept for a short time in the fermenter to precipitate.

After precipitation, the clear juice is decanted and sent to a drum vacuum filter for filtering, the cloudy juice and sediment remaining at the bottom are pumped by a screw pump for filtering into a second vacuum filter. The clarified juice from both filters is combined and sent for further processing: aseptic storage, bottling or concentration.

Stone fruit juice. From stone fruits, especially such as apricots and peaches, which contain insoluble provitamin A-carotene, juices with pulp are mainly prepared. Pulp-free juices are made from plums, cherries and dogwoods.

In the production of juices from cherries and sweet cherries, the fruits are cleaned from the stalks, which can worsen the taste of the juice, then they are crushed in roller crushers or in knife drums. Crushers should be adjusted so that no more than 15% of the stones are crushed. Crushed pits in small quantities give the juice a characteristic aroma, in large quantities worsen the taste of the juice.

After crushing, the fruits are pressed on belt or bag presses. The use of screw presses can lead to additional crushing of the stones and is not recommended for pressing stone fruits.

Dogwood and plums are subjected to heat treatment. 15-20% by weight of water is added to the cornel fruits and heated with bubbling steam at a pressure of not more than 150 kPa for 15-20 minutes. until the skin on the fruit cracks, then hot pressed.

To increase the yield of juice, dogwood can also be treated with pectolytic enzyme preparations. In this case, dogwood is passed through a roller crusher in order to damage the integrity of the berries without crushing the bones, the pulp is heated to 45-50 ° C for 1-2 hours and then pressed.

Plums are heated whole or crushed. Ripe plums are heated as a whole in water or steam. Steam treatment is carried out in a belt scalding and treated with steam for 3-4 minutes. The temperature inside the fruit mass should be 72-76°C. Hot fruits are pressed.

Plums of technical maturity are passed through a roller crusher so that the stones are not crushed. The resulting pulp is heated in a boiler with the addition of 10% water to 70-72 ° C for no more than 15 minutes. so that the pulp of the plums retains its elasticity. The hot mass is pressed together with blanching with water.

CONCLUSION: Method for obtaining juice with persimmon pulp: Freshly harvested persimmon fruits are washed, frozen to (-12) - (-20) ° C and kept at this temperature for 2-4 hours, and then crushed in cavitation mode to a particle size of 50-175 μm. The juice is separated on a juicer and the disodium salt of N-lauryl L-glutamic acid is added to the thus treated juice with pulp in the amount of 0.04-0.55 wt. %. The resulting mixture is homogenized in the same cavitation generator for 3-5 minutes, then packaged in glass

containers and sterilized in a vertical autoclave at the sterilization mode (25÷35÷25)/1001.8÷2 atm. Received juice with pulp has a pleasant taste and aroma characteristic of persimmon fruits, good appearance, no separation is observed [4].

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