Designing of a Device for Increasing Juice Yield and Anthocyanin Content in Blueberry Juice

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Abstract. With the development of times and technology, the improvement of technology has promoted the progress of blueberry juicing device at the same time. However, there are still defects. The current blueberry juicing device cannot improve the yield and anthocyanin content. Therefore, it is easy to waste raw materials. So a device to improve the juice yield and anthocyanin content in blueberry juice is designed to solve this problem. The device enables the squeezed residue discharged into the distillation drum through the slag discharge tube. At the same time, citric acid and sucrose solution is added into the distillation cylinder combined with solution storage tank. Hence it enables the heating of the heating silk base and make a small amount of juice in the residue extracted and evaporated under acidic conditions. Meanwhile, it is conducive to the dissolution of anthocyanins in the residue so that the evaporated steam is discharged into the cooling tube through the distillation tube for condensation and then into the collection tube for collection. The device can improve the juice yield and anthocyanin content of blueberry juice.

Keywords: Blueberry, the Juice Yield Rate, the Anthocyanins, Equipment Designing

1. Introduction
Blueberry fruits are rich in nutrients, which can prevent brain nerve aging, protect eyesight, strengthen heart, fight cancer, soften blood vessels and enhance immunity of human body.

With the development of times and technology, the improvement of technology has promoted the progress of blueberry juicing device. But there are still defects. The current blueberry juicing device cannot improve the juice yield and the anthocyanin content in blueberry juice. Therefore, it is easy to waste raw materials. Thereafter, a device is proposed to improve the juice yield and anthocyanin content rate in the blueberry juice.

Aiming at the shortcomings of the existing technology, the utility model provides a way to improve the blueberry anthocyanins and juice yield rate and content by a device which can increase the rate and anthocyanins content. The newly designed device can solve the existing problem [1].

This designing research relates to the field of food processing technology. The device includes a base, and the top of the base is fixed with a crushing cylinder and is movable with a feeding cover plate. The device, which can improve the juice yield and anthocyanin content of blueberry juice, is equipped with a slag discharge tube [2]. Thereby it enables the squeezed residue is discharged into the
distillation drum through the slag discharge tube. Meanwhile, solution storage tank is combined and citric acid and sucrose solution are added into the distillation cylinder to make a small amount of juice in the residue extracted and evaporated under acidic conditions by heating of the heating silk base. It is also conducive to the dissolution of anthocyanin in the residue, so that the evaporated steam is discharged into the cooling tube through the distillation tube for condensation and then into the collection tube for collection, which further facilitates the device to achieve the purpose of improving the juice yield and anthocyanin content of blueberry juice [3].

2. Major Designing Indexes of the Device
1. A designing drawing of a device for increasing the yield and anthocyanin content of blueberry juice (FIG. 1), including the base (1) [4]

   It is characterized by: the described base (1) gets the top of the fixed installation crushed tube (2), the described grinding cylinder (2) installed at the top of the activity is feeding plate (3), the described grinding cylinder (2) gets internal fixation installation and the stripper plate (4), the described grinding cylinder (2) gets the bottom of the fixed installation through grinding cylinder (2) and the stripper plate (4) and extends to the stripper plate (4) and to the top of the motor (5), the described motor (5) of the output shaft is installed in the stripper plate (4) at the top of the cutting knife (6), the described base (1) fixed installation in the crush is at the top of the drum (2) and on the right side of the collection tube (7), The top of the described collecting cylinder (7) is fixed with a filter cylinder (8), the bottom of the described filter cylinder (8) is fixed with an installation hole (9), and the installation hole (9) is fixed internally electric push rod (11), sliding inside connection of the described filter tube (8) is connected to the fixed extrusion plate (12) of the electric push rod (11), the described bottom of the filter tube (8) is connected with the collecting tube (7) at the top of the connected drainage tube (13), the fixed installation are located in the top of the described base (1) in the collection tube (7) on the right side of the distillation tube (14), the described bottom of the filter tube (8) is connected with distillation tube (14) on the left side of the connecting of slag discharge pipe (15), the described sludge discharge pipe (15) is connected with the top of the valve (16), internal fixation of the described distillation tube (14) is with isolation plate (17), the described distillation tube (14) with the inner fixed installation is in isolation plate (17) at the bottom of the heater (18), the described top of the distillation tube (14) is connected with solution storage tanks (19), the described top of the filter tube (8) is fixed with cooling fluid storage tank (20), the described top of the distillation tube (14) is connected through and extends to the inside of the cooling liquid storage tank (20) distillation tube (21), the described distillation tube (21) from one end of the distillation tube (14) is connected with the cooling liquid storage tank (20) and the internal cooling tube (22), the described cooling pipe (22) from one end of the distillation tube (21) is connected through cooling fluid storage tank (20) and collecting tube (7) at the top of the connected connecting pipe (23), the described right side of the grinding cylinder (2) is connected with and located at the top of the stripper plate (4) and is connected with the filter cartridges (8) at the top of the connecting hose (24).
FIG. 1. Designing device of increasing blueberry juice yield and anthocyanin content

2. Specific indicators: the described distillation drum (14) is a hollow cylinder, the isolation plate (17) is a cylinder, and the diameter of the isolation plate (17) is equal to the inner diameter of the distillation drum (14), and the slag discharge pipe (15) is located above the isolation plate (17) [5-7].

The connection mode between the discharging plate (4) and the crushing cylinder (2) is seamless, and the discharging plate (4) is set at an inclined Angle of 30 degrees inside the crushing cylinder (2).

The filter screen (10) is located directly above the drainage pipe (13), and the filter screen (10) is located in the middle of the connection between the drainage pipe (13) and the filter tube (8).

The bottom of the filter cylinder (8) and the left side of the distillation cylinder (14) are provided with fixed holes corresponding to the slag discharge tube (15), and the solution storage tank (19) is provided with aqueous solutions containing citric acid and sucrose.

The top of the coolant storage tank (20) is connected with the coolant inlet pipe, and the right side of the distillation cylinder (14) is connected with the waste residue discharge pipe located above the isolation plate (17).

3. Technical Scheme of the Device

In order to realize the purpose of improving the juice yield and anthocyanin content of blueberry juice, the utility model provides the following technical scheme: A blueberry juice rate and blueberry juice anthocyanins content increasing device, including the base, as described, the top of the base the fixed installation has been shattered, the crushing cone is equipped with feeding plate at the top of the activity, the grinding cylinder is installed with stripper plate and internal fixation, crushing the bottom of the barrel fixed installation, through the crushing cone and stripper plate and extends to the stripper plate at the top of the motor, the motor output shaft, as described, in fixed installation in the stripper plate at the top of the cutting knife, the top of the base fixed installation are located in the grinding tube on the right side of the collection tube, as described, the collection tube with fixed installation at the top of the filter cartridge, as described, in the fixed installation have mounting holes on the bottom of the filter cartridge, as described, in the installation hole fixed filters, cartridge filters on the left side of the fixed installation are described through and extend to the inside of the filter cartridge electric push rod, the sliding inside of filter cylinder, the connection is connected to the electric putter fixed extrusion board, the bottom of the filter tube connected with and collecting tube connected at the top of the drainage pipe, the top of the base fixed installation are located in the collection tube on the right side of the distillation, the bottom of the filter cartridge connected with tube connected the left side of the discharge pipe and distillation, the top of the discharge pipe is connected with the valve, the distillation barrel inner fixed isolation plate is installed, distillation barrel and inner fixed installation is in isolation plate at the bottom of the heating wire, the top of the
distillation tube is connected with solution storage tanks, the top of the filter cartridge fixed storage tank is equipped with coolant, the top of the distillation tube is connected through and extends to the inside of the storage tank of cooling liquid distillation, distillation tube extends from one end of the distillation tube and connected with the cooling liquid storage tank internal cooling pipe, as described, the cooling pipe from one end of the distillation tube is connected with cooling liquid storage tank and connected to the collecting tube at the top of the connecting tube, as described, the right side of the crushing cone is connected and located at the top of the stripper plate and filter cylinder is at the top of the connecting hose [8].

Preferably, the distillation cylinder is a hollow cylinder and the isolation plate is a cylinder, and the diameter of the isolation plate is equal to the inner diameter of the distillation cylinder, and the slag discharge tube is located above the isolation plate.

Preferably, the connection mode between the unloading plate and the crushing cylinder is seamless, and the unloading plate is set at an inclined Angle of 30 degrees inside the crushing cylinder.

Preferably, the filter screen is located directly above the drain tube and in the middle of the connection between the drain tube and the filter tube.

Preferably, the bottom of the filter cylinder and the left side of the distillation cylinder are provided with fixed holes suitable for the slag discharge tube, and the solution storage tank is provided with an aqueous solution containing citric acid and sucrose.

Preferably, the top of the coolant storage tank is connected with a coolant inlet pipe, and the right side of the distillation cylinder is connected with a waste residue discharge pipe located above the isolation plate.

4. Beneficial Effects

Compared with the prior art, the utility model provides a device to improve the juice yield and anthocyanin content of blueberry juice. It has the following beneficial effects:

1. The increasing rate of blueberry juice and anthocyanins content with the help of the device. By setting the motor, the motor output shaft of the fixed installation of cutting knife to enable the motor driven in cutting knife to cut pieces of blueberry fruit, and then implements the shredded blueberry juice and blueberry pulp through the hose into the filter tube. Through electric putter fixed installation on extrusion plate to enable the electric putter push extrusion moving inside the filter cartridges, and then implements the extrusion threatening the blueberry residue by extruding, to ensure that the blueberry juice from blueberries residue inside the extrusion reduction, Then the discharged blueberry juice was discharged into the collection cylinder through the drainage tube, which facilitates the device to achieve the purpose of increasing the yield of blueberry juice and the content of anthocyanin in blueberry juice.

2. By setting the discharge pipe, the device realizes that after pressing the residue and discharging pipe into the distillation inside the cylinder, and coupled with solution storage tanks to join in a cylinder of citric acid and sucrose solution, by heating for heating wire a residue of a small number of juice extraction and evaporation under acid condition. It is also conducive to the anthocyanins in residue material dissolution to enable the steam distilled water evaporation tube into the cooling tube condensing the back into the collection tube inside collect. The device can improve the juice yield and anthocyanin content of blueberry juice.

Acknowledgments

Fund project: Project of high-level professional biological education in Yunnan Provincial Higher vocational education.

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