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«BASED ON ENERGY EFFICIENT PARAMETERS OF FRUIT DRYING CHAMBER DEVICES FOR SMALL ENTERPRISES»

Kurbanov Ne'matilla	PhD
Rozikova Dilshoda	PhD

Namangan Institute of Engineering and Technology

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BASED ON ENERGY EFFICIENT PARAMETERS OF FRUIT DRYING CHAMBER DEVICES FOR SMALL ENTERPRISES

KURBANOV NE'MATILLA

PhD of Namangan Institute of Engineering and Technology
E-mail: nematilla68@mail.ru, phone: (+99894) 275-69-39

ROZIKOVA DILSHODA

PhD of the Namangan Institute of Engineering and Technology
E-mail: dilshoda@mail.ru, phone: (+99893) 677-41-35

Abstract:

Objective. Identifying the biological characteristics of the date fruit set as tasks in the organization of the technology of artificial drying of date fruit and skin; Analysis of widely used varieties in Uzbekistan; determining the main technological processes; biological properties and determination of the composition of the finished powder and the secondary filler. Expanding the assortment of agricultural products and providing the population with environmentally friendly food products is becoming one of the urgent issues. Development of an energy-efficient improved device that dries agricultural products in sufficient quantity with low consumption costs, as well as justification of its main parameters, efficient use of energy is directed to the main tasks. The drying chamber consists of two modules (drums) moving against the flow of hot air, and in the process of drying raw materials, it makes efficient use of time and leads to the drying of quality products in an energy-efficient way.

Methods. Thus, factors that increase the speed of the drying process include:

- process temperature raise _
- on the material being dried in the void the pressure reduction ;
- keep the heat conductor moist reduce _
- heat conductor on the material speed increase _
- process during the material mixing _

Results. The dry fruit version of dates is higher in calories than the fresh fruit. The high calorie content of dates gives a person great energy throughout the day. Dates are also packed with many vitamins and other nutrients that can be very beneficial for your health. Dates are rich in fiber and carbohydrates.

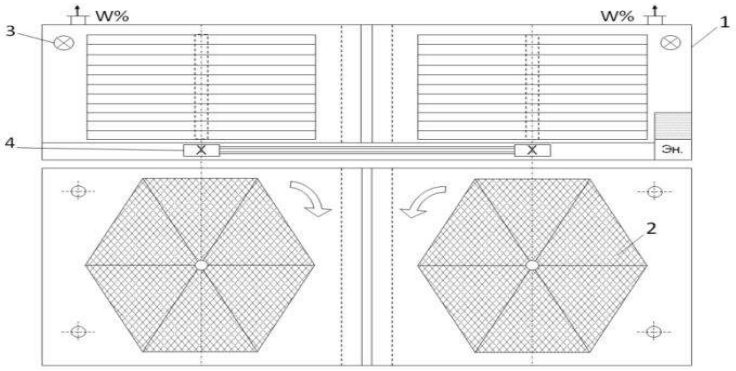
Conclusion. Diabetes is treated using synthetic drugs in combination with several drugs and supplements such as insulin. The substances contained in the date and its skin cells have the property of increasing the production of insulin, as well as reducing the absorption of glucose from the intestine. It is advisable to eat dates fresh, dried, or after drying the fruit skin and turning it into a powder, as an additive to food.

Keywords: Pharmacological properties, date skin, compounds, flavonoids, calories, pharmacological properties.

Introduction. Today, expanding the assortment of agricultural products and providing the population with environmentally friendly food products is becoming one of the urgent issues. Development of an energy-efficient

improved device that dries agricultural products in sufficient quantity with low consumption costs, as well as justification of its main parameters, efficient use of energy is directed to the main tasks. The drying chamber consists of two modules (drums) moving against the flow of hot air, and in the process of drying raw materials, it makes efficient use of time and leads to the drying of quality products in an energy-efficient way. (Figure 1)

Methods.



1-body, 2-moving drums, 3-heater, 4-extension,

Thus, factors that increase the speed of the drying process include:
- process temperature raise _
- on the material being dried in the void the pressure reduction ;
- keep the heat conductor moist reduce _
- heat conductor on the material speed increase _
- process during the material mixing _

In the process of drilling parameters : technological , kinematic and constructional be the process heat conductor and devices in acceleration parameters as follows set we get :

G_c - mass of material being dried , kg/ h ;
s_s - specific heat capacity of dried material , kJ (k ·K);
s_T - of the transport device specific heat capacity , kJ /(kg ·K);
t_n - of the material until dry has been temperature , °C;
s_v - of water specific heat capacity , kJ /(kg ·K);
t_k - of the material from dried later temperature . °C;
t_{tn} , t_{tk} - transport device to the dryer from the entrance from the former and from it next temperatures , °C;
I_0 - to the dryer entering the air comparison enthalpy , kJ /kg;
I_1 - in the heater being heated the air comparison enthalpy , kJ /kg;
I_2 - from the dryer coming out the air comparison enthalpy , kJ /kg;
Q_p - surroundings to the environment of heat loss , kJ /kg.

Taken away research as a result dryer not be built main parameters dependency identified .
- do not build size , m
- drum diameter , m
-drum rolls rpm _
- of the walls thickness , mm
- drying size, m.
- number of pads , pcs

- rotation speed , rpm _
- general mass , t
- consumption to be done power , kW
- the distance between the pads, m

2. Slivani from drying from before and after next condition

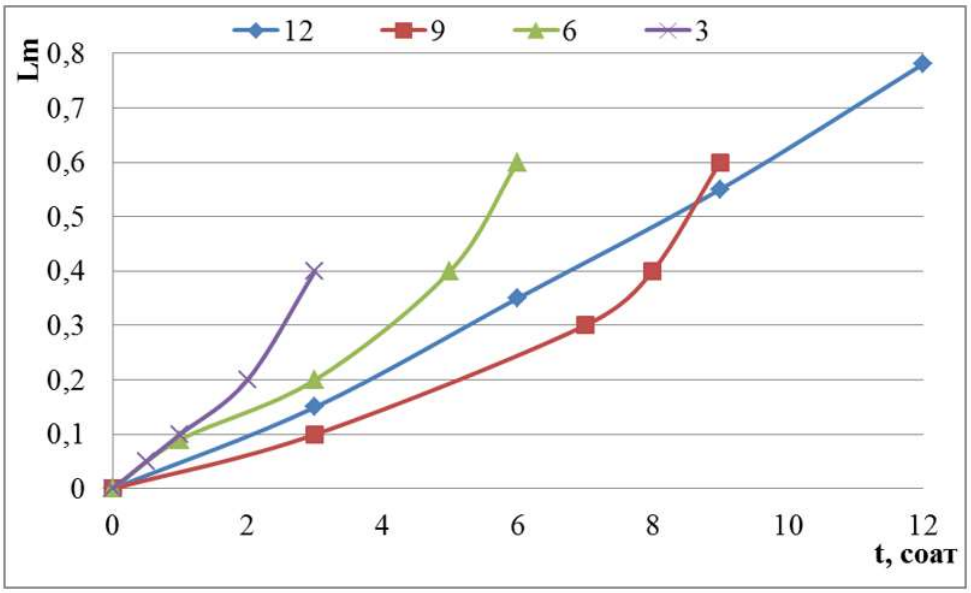


Figure 3. Variation of the speed of the drum during the drying process. The change in the rotation of the drum to the heat flow of air when r=0.80 m

Results. As a result of the conducted theoretical and practical work, the energy-efficient parameters of the fruit drying chamber devices, in accordance with the movement speed of the leading and driven drum, when using materials from the experimental apparatus of the hot air flow in the opposite direction, the layer is found in a dense, fountain-like state, that is, the process accelerates. The drying agent is heated by steam, hot water, fire heaters or electric current. Different options of the drying process are widely used: removing the used drying agent from the dryer, reusing the drying agent, heating the drying agent between the drying chambers, dividing the drying agent into the drying chambers. , additional heating of the drying agent in the drying chamber, use of a variable heat field (sequential exchange of

hot and cold air to the material layer) finds acceptable solutions in the main parameters of the process.

According to the design of the proposed improved dryer, a simple and moving drum is calculated based on the number of sections and the number of revolutions.

The dry fruit version of dates is higher in calories than the fresh fruit. The high calorie content of dates gives a person great energy throughout the day. Dates are also packed with many vitamins and other nutrients that can be very beneficial for your health. Dates are rich in fiber and carbohydrates.

Tabl.1

Nutritional value of 100 grams of dates:

Total energy value	270-310 kkal
Protein content	5-6 g
Total fat content	0,4 g7
Sodium content	2 mg
Potassium content	656 mg
Carbohydrates (dietary fibers and sugars)	75 g

As can be seen from the table, dates have a very high energy content, 100 g of dates contain 310 kcal of energy. While most of this energy is in the form of sugar (such as fructose and glucose), it is high in fiber and low on the glycemic index. This means that eating 2-3 dates at a time is a safe source of low-fat energy, even for diabetics. This is one of the best benefits of dates and helps in weight management and blood sugar regulation. Due to the high content of dietary fibers in the date fruit, when it is consumed, intestinal activity improves and helps with regular bowel movements. It was also noted that when dates are regularly consumed, the concentration of ammonia in feces is significantly reduced. Therefore, it is safe to say that dates make a significant contribution to the overall nutritional system and overall health. Antioxidants are basically compounds that destroy dangerous free radicals that cause oxidation process and cause great damage to human cells. Oxidation can be very dangerous because it can cause significant damage to the structural and genetic integrity of cells. Date meat and skin cells have a high concentration of antioxidants. Especially dried and powdered date peel contains a lot of antioxidants. Dried and powdered dates contain carotenoids, flavonoids and phenolic acid. Caratenoids are very important for the well-being of the eyes. They also help improve heart health. Flavonoids, on the other hand, are a type of antioxidants that are known to have anti-inflammatory properties and help reduce the effects of chronic diseases such as diabetes. Flavonoids are also beneficial for brain function and have been shown to reduce the risk of degenerative brain diseases such as Alzheimer's.

There is also evidence that flavonoids may help reduce the risk of certain types of cancer. Phenolic acid is also a type of antioxidant and is mainly known for its anti-inflammatory properties. It is useful in reducing the risk of heart disease and some types of cancer. Inflammatory cytokines like interleukin can be very dangerous for your brain. An increase in IL-6 (Interleukin 6) causes the development of neurodegenerative diseases such as Alzheimer's disease. The presence of inflammatory markers is never a good sign for nerve health, and therefore extreme caution is required in this situation. Regular use of dates has been found to be beneficial in reducing IL-6 levels, thus helping to reduce the risk of developing degenerative brain diseases such as Alzheimer's. . Diabetes is one of the most common diseases in the world.

Discussions. Diabetes is treated using synthetic drugs in combination with

several drugs and supplements such as insulin. The substances contained in the date and its skin cells have the property of increasing the production of insulin, as well as reducing the absorption of glucose from the intestine. It is advisable to eat dates fresh, dried, or after drying the fruit skin and turning it into a powder, as an additive to food. Figure 4 in the obtained experimental results it can be seen that analytical experimental results were based on some parameters in the process of extracting moisture.

Figure 4. The time and temperature of the drying process are gradually increased

Tabl.2

Amount of time taken for drying Temperature taken for drying	Amount of time taken for drying Temperature taken for drying
1 hour; 30 minutes at 250C	1 hour; 30 minutes at 250C
2 hours at 300C	2 hours at 300C
3 hours at 500C	3 hours at 500C
4 hours at 650C	4 hours at 650C
5 hours at 700C	5 hours at 700C

Conclusion. Based on the experimental research, the theoretical calculations were tested to determine the main parameters of the proposed drying device.

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