Тому метою наших досліджень є визначення наявності функціональних речовин у грибних стравах та виявлення методів первинної та температурної обробки грибів, які забезпечують збереження біоактивних сполук у продуктах харчування, виготовлених із грибів. Було перевірено штами чотирьох видів дереворуйнівних грибів, що, за даними наукової літератури, є потенційним джерелом біоактивних сполук, здатних до абсорбції важких металів та регулювання розвитку корисної мікробіоти в нижніх відділах кишкового тракту. Грибну сировину вивчали в сирому вигляді, після бланшування, стерилізації у водяних розчинах та у формі грибного порошку.

Отримані результати дозволять стверджувати, що в плодових тілах грибів *Pleurotus ostreatus* (Jacq.) P. Kumm., *Pleurotus pulmonarius* (Fr.) Quél., *Pleurotus eryngii* (DC.) Quél., *Cyclocybe aegerita* (V. Brig.) Vizzini промислових штамів, поширених на ринку України, які проходять первинну обробку методом бланшування протягом 5–15 хв кількість ендо- та екзополісахаридів суттєво не зменшується. Полісахариди грибів термостійкі та майже не руйнуються за короткочасної (20–30 хв) температурної обробки при температурі 180…220 °С. Харчові волокна плодових тіл перевірених штамів зберігаються після стерилізації тривалістю 1 год при температурі 130 °С.

Отже, основні функціональні речовини грибів залишаються в продуктах харчування після процесів термічної обробки і можуть бути задіяні в метаболічних процесах людського організму.

IMPROVEMENT OF EQUIPMENT FOR THE IMPLEMENTATION OF THE JERUSALEM ARTICHOKE CLEANING PROCESS

Horielkov D., PhD in Tech. Sc., Assoc. Prof.
Dmytrevskyi D., PhD in Tech. Sc., Assoc. Prof.
Guzenko V., PhD in Tech. Sc., Sen. Lect.
Solonchuk L., Master Student
Kharkiv State University of Food Technology and Trade, Ukraine
Esma Tezcan, Assist. Prof. Dr.
Istanbul Aydin University, Turkey

Jerusalem artichoke has a rather complicated form of tubers, which leads to significant losses during the cleaning process. To ensure the safety of raw materials there is a need to make significant changes to the cleaning process. It is the creation of new equipment, which will help to reduce the

loss of raw materials and improve the quality of cleaning, is a promising direction of research.

Based on the literature and patent research, it has been established that the most promising direction for developing a method for cleaning Jerusalem artichoke is the use of the combined action of preliminary heat treatment processes with steam and subsequent mechanical cleaning of the product. The combination of processes can be implemented through the use of the proposed design of the apparatus for the Jerusalem artichoke cleaning. To perform the tasks it was proposed to apply the effect of steam overpressure and mechanical after-treatment during the processing of the Jerusalem artichoke. The use of steam overpressure will enhance the effect of cleaning elements and eliminate the need for long-term treatment in a temperature environment. In addition, the use of high-pressure steam and supplying it through the nozzles will significantly save energy costs for heating water and the costs of the actual water for the process. To implement the proposed method, it is proposed to use the apparatus for cleaning Jerusalem artichoke.

The device works as follows: the raw material is preloaded into the working chamber (drum) through the loading hopper. The working chamber rotates with a certain frequency. Due to the rotation of the chamber, Jerusalem artichoke tubers are pressed against the working bodies of the drum, which are located along the walls. On the surface of the tubers are simultaneously working bodies, which are cleaning rollers of various shapes and sizes. Due to the fact that the rollers have a different shape and size, it is possible to clean the surface of tubers of various shapes and sizes. The rollers, covered with the surface of a special grooved rubber, make a rotational movement around its axis and around the rotating shaft of the chamber. Each roller has a surface with variable cross-section, which form a protrusion and depressions along the entire length of the working surface. The transition of each protrusion to the depression and vice versa is made with a bevel. During the transition from the performance to the hollows, the tubers rotate both around their major axis and around their smaller axis. This in turn contributes to uniform and high-quality peeling of tubers. The rollers are installed with a mutual arrangement of protrusions and depressions on all rollers of the working surface of the drum. The rotational movement enhances the effect of the cleaning rollers on the surface of the Jerusalem artichoke tubers. The working chamber is driven by an electric motor that transmits movement through a V-belt transmission. Inside the chamber is a screw, which is necessary to move the raw material from the loading area to the discharge area. The surface of tubers of Jerusalem artichoke is affected by overpressure steam. Steam is supplied to the

working chamber through steam nozzles. There is a short-term processing of tubers of Jerusalem artichoke with steam. Steam transfers a large amount of heat only to the surface layer of a Jerusalem artichoke tuber.

Thus, minimization of penetration of the surface layer and a significant reduction in processing time is achieved. The minimum duration of heat treatment is also necessary in order to save energy resources and save water.

During the processing of products with steam overpressure, moisture boils up in the superficial intercellular layer of the tuber. After a sudden release of steam from the working chamber, the pressure drops sharply. The moisture in the surface intercellular layer after boiling turns into steam and breaks the skin of the tuber, thereby ensuring its easy separation. With the simultaneous impact of steam and cleaning rollers, a combined effect occurs, which allows the steam to accelerate the heating of the surface layer of the tuber. In addition, jets of water act on the surface of the Jerusalem artichoke. Due to the influence of water jets, the peel is rinsed from the surface of the tubers, and the peel residue is rinsed from the working chamber. Purified tubers are unloaded from the drum's working chamber. Through the door for unloading. The process of purification, which is necessary when using devices with abrasive working bodies, in this case is minimized.

Thus, the developed apparatus allows the process of cleaning the Jerusalem artichoke tubers of various shapes and sizes. In general, the cleaning process becomes less time consuming due to the absence of the need for pre-calibration of raw materials, and the process of purification is minimized.