



## **XII МІЖНАРОДНА НАУКОВО-ТЕХНІЧНА КОНФЕРЕНЦІЯ**

**"Наукові проблеми харчових технологій та промислової  
біотехнології в контексті євроінтеграції"**

## **ПРОГРАМА ТА ТЕЗИ МАТЕРІАЛІВ**

*7 листопада 2023 р.*

**КИЇВ НУХТ 2023**

**Наукові проблеми харчових технологій та промислової біотехнології в контексті євроінтеграції** : Програма та тези матеріалів XI Міжнародної науково-технічної конференції, 7 листопада 2027 р., м. Київ. – К.: НУХТ, 2023 р. – 337 с.

ISBN 978-966-612-303-2

Подано програму і тези матеріалів доповідей XII Міжнародної науково-технічної конференції «Наукові проблеми харчових технологій та промислової біотехнології в контексті євроінтеграції» відповідно до тематичних напрямів 23-ї секції «Наукові проблеми харчових технологій та промислової біотехнології» Наукової ради Міністерства освіти і науки України.

Метою конференції є розширене висвітлення наукових здобутків, ознайомлення експертів харчової промисловості та промислової біотехнології, підвищення рівня проведення експертиз проектів, що подаються на конкурси з отримання грантів для фінансування за кошти державного бюджету та їх спрямування на розширення тематики наукових проектів для можливості співпраці науковців у світовому науковому просторі.

*Рекомендовано Вченою радою НУХТ*  
Протокол № 5 від «30» листопада 2023 р.

Друкується в авторській редакції

ISBN 978-966-612-303-2

© НУХТ, 2023

Microbial transglutaminases attracted initial interests of the food industry due to its ability to mold minced meat into a firm steak. The restructure of meat products ensures greater firmness causing little loss of quality during cooking [2]. The mTGase yields a final product with retained organoleptic properties similar to conventional meat in terms of flavor, texture, appearance, and taste. Some of these studies also show that mTGase supplementation could increase the gel strength in meat products and cause positive effects on the development of meat proteins of pork, beef, chicken, and fish.

The cross-linking of proteins and other compounds of the gel system causes changes in the proteic fraction of food matrices, leading to improved texture and stability in terms of temperature denaturation, emulsifying properties, gelation, and increased water-binding capacity.

### **Literature**

1. R. Lantto, P. Plathin, M. Niemistö, J. Buchert, and K. Autio, “Effects of transglutaminase, tyrosinase and freeze-dried apple pomace powder on gel forming and structure of pork meat,” *LWT-Food Science and Technology*, vol. 39, no. 10, pp. 1117–1124, 2016.

2. Lesiow T, Rentfrow GK, Xiong YL (2017) Polyphosphate and myofibrillar protein extract promote transglutaminase-mediated enhancements of rheological and textural properties of PSE pork meat batters. *Meat Sci* 128:40–46.

**UDC 637.344.6**

## **16. FIBER FROM THISTLE SEEDS IN ALBUMINE PRODUCT**

**N.A. Soloviov, A.V. Tymchuk, O.V. Grek**

*National University of Food Technologies (NUFT), Kyiv, Ukraine*

*Introduction.* The improvement of the assortment structure is facilitated by the introduction of progressive technological processes, the creation of new technologies using various types of non-traditional raw materials, which reduce the caloric content

and simultaneously increase the nutritional and biological value of dairy products.

New principles of using plant ingredients can be implemented by creating functional mixtures, the use of which will allow to develop a wide range of albumin products, to ensure the stability of their technological properties during storage, to minimize the consumption of dairy raw materials, and to involve plant raw materials in the technological cycle of production.

The aim of the work was to study the technological properties of thistle seed fiber for use in an albumin product with an extended shelf life.

*Materials and methods.* Fiber from thistle seeds was chosen as a plant ingredient compatible with the albumin base (TU U 15.8-31062507-007:2007). According to the manufacturer's data, thistle seed fiber has the following composition, % per 100 g of product: proteins - 22.28, fats - 7.18, carbohydrates - 3.62.

The albumin mass was obtained in laboratory conditions from whey with an active acidity of 4.4...4.6 units. pH by thermoacidic coagulation during  $(90\pm 2)$  min at a temperature of  $(95\pm 2)$  °C. The protein base had a mass fraction of moisture -  $77\pm 2\%$  and titrated acidity -  $(96\pm 3)$  °T.

Seed fiber is made from ground defatted milk thistle seeds, contains nutrients, vitamins, macro- and microelements and carotenoids, which in the human body are converted into vitamin A, fatty acids, taxifolin, flavolignans, alkaloids, saponins, has antioxidant, antihistaminic and hepatoprotective properties properties.

Taking into account previous studies [1], its ability to swell and dissolve [2] in various dispersed media - water and low-fat whey with the following parameters was determined regarding the need to prepare the plant component: dry substance -  $6.5\pm 0.2\%$ ; lactose -  $4.0\pm 0.1\%$ ; titrated acidity is  $16\pm 0.5$  °T.

Crushed nuts were used as a flavor filler, which gives the finished product a more pleasant taste and flavor, and also enriches it with vegetable proteins, carbohydrates, vitamins, pectin, fiber, and minerals.

*Results.* Food fibers have an increased moisture-holding capacity due to the natural capillary structure of the fibers, are heat-stable, and cold-resistant. The ability to swell in water for thistle seed fiber is  $57.4\pm 0.3\%$ . This indicator in the whey

slightly decreases and is  $54.7\pm 0.2\%$ . The ability to swell in water is higher than in serum, which is explained by the content of surface-active substances in it, which are adsorbed on the surface of the fiber, form a protective layer and prevent the access of liquid.

Model mixtures were made based on albumin mass with the content of the above-mentioned plant ingredient in amounts from 1 to 5%. The prepared nut kernels and sugar were added to the albumin base and mixed for  $7\pm 3$  min.

*Conclusions.* As a result of the conducted research, it was established the possibility of using thistle seed fiber in the amount of 2% to 4% in the albumin products. It was established rational modes of preparation of the non-dairy component to preserve the quality indicators of the protein base.

### **List of references**

1. Grek, Olena & Ovsienko, Kira & Tymchuk, Alla & Onopriichuk, Olena & Kumar, Amit. (2020). Influence of wheat food fiber on the structure formation process of whey-creamy cheeses. *Ukrainian Food Journal*. 9. 332-343. 10.24263/2304-974X-2020-9-2-6.

2. Onopriichuk, O., Grek, O. & Tymchuk, A. (2022). Influence of malt properties on the indicators of milk-protein concentrates. In O. Paredes-López, O. Shevchenko, V. Stabnikov, & V. Ivanov, (Eds.), Bioenhancement and fortification of foods for a healthy diet (pp. 179-202). CRC Press, Boca Raton, London. DOI: 10.1201/9781003225287-12.

**UDK 637.521.2**

## **17. DIETARY FIBERS IN EMULSIFIED MEAT PRODUCTS**

**Pergat O., Strashynskiy I., Pasichnyi V., Semeniuk A.**

*National University of Food Technologies (NUFT), Kyiv, Ukraine*

Meat is one of the most nutritious foods widely consumed throughout the world. Meat is processed in multiple ways before consumption. For instance, the processing may include simple roasting of the meat, but there are numerous meat products that