

Current results 2023 (second half of the year)

AP19679638 «Scientific and practical basis for the use of collagen-containing concentrate in the production of specialized cottage cheese products for the nutrition of sportsmen»

Description section of the calendar plan	Implementation timeframe	Brief description of the work done/results obtained	Information on possible usage
No. 1 Study of the process of obtaining collagen-containing concentrate from raw materials of poultry processing industry	July -November 15, 2023.	All planned results in this direction have been achieved. Application for a patent of the Republic of Kazakhstan for the method of processing collagen-containing raw materials to obtain a concentrate from the composition of raw materials of the poultry processing industry was filed (application No. 2023/0877.1 dated 21.12.2023). Notification of the positive result of formal examination was received.	The developed collagen-containing concentrate containing 46.5% collagen can be used as a biologically active additive (BAA) for the production of functional foods, especially in sports nutrition. Extracts from medicinal and fruit and berry plants with high antioxidant content have immune-stimulating properties and can be used in the production of products for specialized nutrition. These additives improve the antioxidant profile of products and increase their health value, especially in sports.
№1.1 Conducting detailed theoretical research on selection of collagen-containing raw materials for poultry processing industry and methods of collagen-containing concentrate production	July - November 15, 2023.	For selection of collagen-containing raw materials of poultry processing industry and development of methods for obtaining collagen concentrate, domestic and foreign literature sources were analyzed.	
№1.2 Study of composition and properties of collagen-containing raw materials of poultry processing industry	July -November 15, 2023.	On the basis of experimental studies the collagen, protein, fat content, total moisture content and active acidity of poultry processing raw materials were determined. Chicken skin, bone tissue and feet were selected as collagen-containing raw materials for further studies.	
№1.3 Development of	July -November	A biotechnological	

<p>biotechnological method of collagen-containing concentrate production</p>	<p>15, 2023.</p>	<p>method for obtaining collagen-containing concentrate from chicken skin has been developed. An application for a patent of the Republic of Kazakhstan for a method of processing collagen-containing raw materials to obtain concentrate from raw materials of the poultry processing industry was filed (application No. 2023/0877.1 dated 21.12.2023).</p>	
<p>No. 2 Selection of plant raw materials and method for obtaining BAAs with expressed antioxidant properties</p>	<p>July -November 15, 2023.</p>	<p>All planned results within the framework of these works have been achieved. The results of research published: 1) Zharykbassova K.S., Silybaeva B.M., Turgalieva D.T., Tursynkhanova A.E., Aubakirova J.T. Actuality of the use of berry plants in the production of dairy products for sports nutrition // Collection of scientific and practical conference of Novosibirsk SAU “Actual problems of agroindustrial complex”, RF, Novosibirsk, October 20, 2023, P.393-397; 2) Zharykbassova K.S., Silybaeva B.M., Turgalieva D.T., Tursynkhanova A.E., Aubakirova J.T. Prospective directions of production of fermented milk products for sports nutrition // Collection of reports of the International Scientific and Practical Conference</p>	

		<p>“Prospective directions of development of agrarian and food industry”, dedicated to the 80th anniversary of Dr. Sci, Professor Zhailaubaev D.T., 75th anniversary of Candidate of Technical Sciences, Professor Erengaliev A.E. and 70th anniversary of Doctor of Technical Sciences, Professor Kakimov A.K. / NAO “University named after Shakarim city Semey”. Kazakhstan, Semey - December 8, 2023 - P.76-79</p> <p>3) Kakimov AK, Zharykbassov ES, Kakimova JH, Jumazhanova MM Application of collagen-containing concentrate in the development of technology cottage cheese products for sports nutrition // Collection of reports of the International Scientific and Practical Conference “Prospective directions of development of agrarian and food industry”, dedicated to the 80th anniversary of Dr. Sci, Professor Zhailaubaev D.T., 75th anniversary of Candidate of Technical Sciences, Professor Erengaliev A.E. and 70th anniversary of Doctor of Technical Sciences, Professor Kakimov A.K. / NAO “Shakarim University Semey city”. Kazakhstan, Semey - December 8, 2023 - P.88-91</p>	
No. 2.1 Conducting de-	July - November	To select plant raw ma-	

tailed theoretical research on selection of raw materials of plant origin with high content of antioxidants	15, 2023.	terials with high antioxidant content we analyzed domestic and foreign sources. The following plants were selected: medicinal plants: pharmacy bloodwort, common yarrow, common sawfly, steppe sage, red clover; fruit and berry plants: sea buckthorn, hawthorn, black mountain ash, rosehip, spike-nard, brome-grass.	
No. 2.2 Selection of raw materials of plant origin taking into account their distribution area and frequency of occurrence for obtaining BAAs with expressed antioxidant properties	July - November 15, 2023.	In order to study the range and frequency of occurrence of 5 medicinal and 5 fruit and berry plants, 3 expeditions were conducted in the Abai region. Mountain, steppe, forest-steppe and forest zones were covered. Based on the expeditions, a map with routes and places of collection of plants with high antioxidant content was compiled.	
No. 2.3 Study of chemical composition of selected plant raw materials	July - November 15, 2023.	Based on the analysis of the results of the chemical composition study, 2 medicinal plants were selected for further experiments: common yarrow and steppe sage from 4 species collected during the expeditions. From fruit and berry plants we selected sea buckthorn and cinnamon rosehip, also selected from 4 species studied during the routes.	
No. 2.4 Selection of a method for obtaining BAA with expressed antioxidant properties from raw materials of plant origin	July - November 15, 2023.	The extraction method was chosen to obtain BAAs with antioxidant properties. Extraction of medicinal plants was carried out with 96%	

		ethyl alcohol at a ratio of 1:10. On the basis of experiments it was found that for berry plants 75% ethyl alcohol in the ratio of 1:5 is optimal.	
No.3 Study of chemical composition of collagen-containing concentrate and BAAs from plant raw materials	July - November 15, 2023.	According to the results of the analysis of the chemical composition of collagen-containing concentrate and plant extracts, the following was found: in the concentrate the moisture content - 64.5-67.2%, protein - 18.2-20.1%, fat - 9.7-13.4%. In extracts from medicinal plants: moisture - 20-23%, tannins - 7.8-8.5%, starch - 34.2-35.8%. In extracts from berry plants: moisture - 22-24%, fiber - 0.5-0.7%.	