**Title of the project topic:**IRNAP14870972 «Development of enzyme immunoassay based on the recombinant antigen of *Trichinella spp*.»

**Abstract:**Trichinellosis is a foodborne zoonosis that can be transmitted to humans by ingestion of raw or undercooked meat from animals infected with nematode larvae belonging to the genus *Trichinella*. *Trichinella* is distributed throughout the world, and all monogastric mammalian species are potential hosts for the parasite.

The idea of the project is to develop an enzyme immunoassay based on the recombinant Tsp1 antigen of the excretory-secretory product (ESP, ES) of *Trichinella spp*. (53 kDa). ES antigen of muscle larva *Trichinella spp*. is the most widely used diagnostic antigen for Trichinellosis, but obtaining the ES antigen requires the collection of helminths from infected animals and the detection of specific IgG against the muscle larvae of Trichinella spp. However, the use of enzyme immunoassay based on recombinant antibodies will speed up the process of diagnosis without slaughtering the animal, reduce the production of antigens for diagnosis, standardize components, and obtain high quality and specificity of ELISA. Serological methods can be useful for the purposes of epidemiological survey and monitoring of trichinella-free farms.

**The aim of the project** is to develop an ELISA test system based on the recombinant protein of the excretory-secretory product of*Trichinella spp***.**

**Expected Results:**

Protocols for the development of an enzyme-linked immunosorbent assay (ELISA) to detect specific antibodies in blood serum to the recombinant protein Tsp1, immobilized on a solid-phase polystyrene plate, will be refined.

The diagnostic value of ELISA based on the recombinant protein Tsp1 will be determined, comparing it with known classical methods and commercial ELISA tests. An abstract will be prepared for participation in an international scientific conference.

An ELISA test system will be developed based on the obtained recombinant antigen of *Trichinella spp*. A laboratory protocol for manufacturing components of the "ELISA kit for serological diagnosis of trichinellosis" and instructions for its use will be developed.

One article or review will be published in a peer-reviewed scientific journal, ranking in the first quartile by impact factor in the Web of Science database and/or having a Cite Score percentile in the Scopus database of not less than 80.

An analysis and synthesis of research results for the years 2022-2024 will be conducted, and a final project report will be prepared.

Two presentations will be given at scientific forums, including one at an international conference in foreign countries with the publication of abstracts.

Two dissertations for the degree of "Master of Natural Sciences" in the field of "Biotechnology" (specialization in "Veterinary Biotechnology") and two thesis works in the same field will be defended.

Copyright certificates for the research results will be obtained.

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**List of publications and patents published within the framework of this project: (with links to them): Publications in the framework of this project for 2023**

1. Gubaidullin N.N., Askarova N.N., Gadzhimuradova A.M., Akibekov O.S. Bioinformatics analysis of the selection of oligonucleotides for sequencing of various Trichinella species" // Materials of the international scientific-practical conference "Seifullinskie chtenia - 19" dedicated to 110 – years to Handelman M.A. " - 2023.- T.I, Ч.II.- Б.210-212.

2. Akibekov O.S., GajimuradovaA.M., ZhumalinA.Kh., DuisenovS.M., GubaidullinN.N., AskarovaN.A. Serine protease of Trichinella spiralis and its possibleapplication in the early diagnosis of trichinellosis inanimals //Herald of Science of S.Seifullin Kazakh Agrotechnical Research University: Veterinary Sciences. –2023. –Vol.3(003). – P. 14-24.doi.org/ 10.51452/kazatuvc.2023.3 (003).1520

**Information for potential users:** An enzyme immunoassay system based on the recombinant protein of the excretory-secretory product Trichinella spp will be developed. for early diagnosis of trichinosis in animals and humans.