

Project name: AP19676907 "Development of mushroom's extracts and spent substrates efficient use technology as means potato protection against phytopathogens and feed additives manufacturing"

Relevance:

Until now, in a number of foreign countries, as in the Republic of Kazakhstan, antifungal and antiviral effects of medicinal fungi in the field of potato protection have not been studied. The production of mycelium, fruit bodies and extracts of edible and medicinal xylotrophic fungi with high biological value opens up wide prospects for the creation of new environmentally friendly productions and their application in food industry, agriculture and medicine. In addition, used substrates for growing mushrooms need bioconversion, which involves the production of feed bioadditives containing a large amount of protein, lignin and other nutrients. The success of the accelerated production of environmentally friendly products of basidial macromycetes largely depends on the correct choice of lignocellulosic substrate and can be enhanced with the help of modern safe growth-stimulating and nutritional supplements.

Purpose:

The purpose of the project is to develop a technology for the effective use of mushroom extracts and spent substrates of edible and medicinal xylotrophic mushrooms as a means of protecting potato from viral and fungal pathogens with the manufacture of feed additives.

Expected and achieved results:

Within the framework of the project on the basis of NJSC "S. Seifullin KATU" (KATU) plans to: study the antimicrobial and antioxidant effects of medicinal mushrooms; identify BAS producing strains, carry out genetic certification and create a collection of promising species of edible and medicinal basidiomycetes, develop an effective automated technology for their cultivation, study the possibility of using processed mushroom waste as effective feed additives for animals and secondary bioadditives for mushroom cultivation.

As a result of the project, 3 recommendations will be prepared: on obtaining and using antiviral and antifungal preparations from xylotrophic fungi; on the intensive technology of cultivation of edible and medicinal basidial macromycetes' promising species based on plant waste available in Kazakhstan; production and use of a highly nutritious mushroom feed additive for farm animals and a secondary additive for the cultivation of mushrooms. The developed recommendations will serve as a methodological basis for obtaining additional domestic environmentally friendly products for food and agricultural purposes. The project has a high interdisciplinarity, as work will be carried out in several directions and specialists in the field of plant protection and immunity, mycology, biotechnology, biochemistry, veterinary medicine, and information technology will be involved.

Based on the results of the research, at least 2 (two) articles and (or) reviews will be published in peer-reviewed scientific journals indexed in the Science Citation Index Expanded of the Web of Science database and (or) having a CiteScore percentile in the Scopus database of at least 50 (fifty); as well as at least

1 (one) article or review in a peer-reviewed foreign or domestic publication recommended by the CQASHE.

In addition, based on the results of research, master's and doctoral dissertations (PhD) will be defended, materials of international scientific and practical conferences will be published, an application for a patent of the Republic of Kazakhstan for an invention will be submitted to RSE "NIIP".

Study group members:

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