**Nanocomposite systems for effective feeding, elimination and preventive treatment of diseases in animals and birds on the basis of nanosilicas with immobilized on their surface biologically active substances, enzymes and probiotics**

**Abstract**

The project is dedicated to the creation of a series of polyfuctional nano-biocomposite materials by Makrosrb LT. Such material will be used as preparations for preventive treatment and elimination of diarrheal syndrome in animals and birds, immunity improvement and activation of vital processes at the expense of not only nanosilica itself, but also immobilization on its surface of antioxidants, terpenoids, vitamin complexes, enzymes, probiotics and nanofungicides which prevent mycotoxin contamination. It is supposed that the final product will consist of the mixture of nanocomposites which will be prepared depending on the appliance purposes (elimination, preventive treatment).

Scientific goals of the project include the investigation of the influence of compaction on physico-chemical properties of nanosilica (bulk density, specific surface, water saturation, adsorption of water and organic substances), its ability to bind protein molecules; analysis of processes of interaction between nanosilicas and probiotics by the example of different types of lactic bacteria, influence of nanoparticles on their vital capacity and reproductive process; development of optimal methods of immobilization of polyphenols, terpenoids, antibiotics, nanofungicides on the surface of nanosilicas, determination of physico-chemical parameters of such interactions, processes of desorption of active substances from the surface, their stability in immobilized condition; performance of tests on treatment of diarrheal syndrome on farm livestock. Thus, on the basis of the nanosilica «Silasita» one will create composite materials which include antibiotics, vitamin complexes and enzymatic agents, used under the poultry operation and animal breeding. High use of nanocomposites on the basis of silica will allow to increase productivity of livestock breeding complexes by 5-10%.