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RELEVANCE OF PRODUCTION OF ENZYME PREPARATION "MACEROBACILIN G3X"

Various enzyme preparations are widely used in the most diverse branches of food and light industry, in cosmetics, in the production of detergents, in agriculture, in the medical industry, which is explained by their high catalytic activity, specificity of action, and the ability to carry out biochemical reactions. The term “enzyme preparation” is currently used both to characterize industrial enzymes and to describe pharmacological agents [2, p. 80].Knowledge of the role of enzymes as biological catalysts for all living things on the Earth served as the basis for the development of the technology of enzyme preparations as a science and for their creation in industrial production. Enzymes play the most important role in all life processes [1, p. 48]. Therefore, it is advisable to use enzymes for carrying out various industrial processes, both from the economic and technological points of view.

Bacteria of the genera *Bacillus, Clostridium, Erwinia* are used in industry for the production of enzyme preparations. Among them, representatives of the genus *Bacillus*, such as *B. subtilis, B. circulans*, are most often used. Their use is explained by the fact that most representatives of this genus are non-pathogenic and can

synthesize enzymes into the culture liquid, which greatly facilitates their isolation and purification. A significant advantage of *Bacillus* bacteria from the economic point of view is their ability to grow on simple nutrient environment, which is advantageous. The advantages of microbial synthesis of enzymes have been confirmed experimentally: a high rate of biomass accumulation, the ability of microbes to be cultivated on cheap nutrient environment; the ability to regulate and scale biotechnological production.

In agriculture, the pectolytic enzyme pectate transeliminase is widely used as an additive to animal feed, which is contained in the enzyme preparation for fodder purpose “Macerobacillin G3X”, which is manufactured at the state enterprise (SE) “Enzym” (Ladyzhyn, Vinnytskaoblast) using *Bacillus circulans*. Cheap feed contains a lot of pectin, which is poorly used by animals, and higher-quality feed has a high cost. Therefore, the addition of the enzyme drug “Macerobacillin G3X” to feed significantly reduces the financial costs of keeping animals, as pectate transeliminase breaks down pectin and makes it available for normal assimilation by animals.

The mechanism of the biotechnological process of obtaining pectate transeliminase consists in increasing the cellular biomass of the producer. Cultivation of enzyme-producing microorganisms is carried out by a deep method in sterile liquid environment with forced aeration and mixing, since this method allows automatic regulation of such parameters as temperature, pH of the environment, concentration of dissolved oxygen, etc.

In connection with the need to implement a more productive technology for the production of pectate transeliminase, material and technical calculations were carried out, according to which, using more advanced equipment, it is possible to obtain 120 tons of “Macerobacillin G3X” per year from raw materials.

SE “Enzym” is the only enterprise for the production of enzyme preparations of biotechnological origin in Ukraine and produces various products: "Protosubtilin", "Alkaline Protease", "Glucoamylase", etc [3]. Considering the production of

the enzyme preparation "Macerobacillin G3X" and the growing needs for its use, it is economically feasible to develop and improve the production project of this enzyme preparation.

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SYNTHESIS OF *N*-(2,2,2-TRICHLORO-1-((5-(ARYLAMINO)-1,3,4-THIADIAZOL-2-YL)AMINO)ETHYL)CARBOXAMIDES

1,3,4-Thiadiazole derivatives are of great importance for medicinal chemistry and pharmacy. Among them the compounds with antimicrobial [1, 3], antitumor [4], antiviral [5], antifungal, and other activities are known.

To prepare *N*-(2,2,2-trichloro-1-((5-(phenylamino)-1,3,4-thiadiazol-2-yl)amino)ethyl)carboxamides **4** (Scheme 1) we used *N*-(1-isothiocyanato-2,2,2-trichloroethyl)carboxamides**1** and *N*-phenylhydrazinecarboxamides**2** as starting reagents at the first stage of the reaction. The reaction was carried out in acetonitrile at reflux for 1-3 min, which led to the preparation of *N*-(2,2,2-trichloro-1-(2-(phenylcarbamatothioyl)hydrazine-1-carbothioamido)ethyl)carboxamides **3**, followed by their cyclization in DMF with iodine and triethylamine. The reaction results in the cleavage of atomic sulfur $^1/_8$ of S_8 and the formation of the target product **4**. The structures of the starting and target compounds were confirmed by ^{1}H and ^{13}C NMR spectroscopy.