



STUDY OF THE ACTIVITY OF α -AMYLASE ENZYME IN WHEAT (TRITICUM) GRAINS GROWING IN UZBEKISTAN

Zaynutdinova G.F.

Normakhamatov N.S

Tashkent Pharmaceutical Institute

Uzbekistan, Tashkent, oybek 45

e-mail: gulnozaxonzaynutdinova@gmail.com, tel: +998 90 988 12 53

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Relevance: Wheat (Triticum) is one of the oldest and most widely cultivated cereal crops in the world. It was domesticated from wild grains and has played a major role in the history of human agriculture. Wheat is mainly used in the production of bread, pasta, sweets, and other food products.

Wheat (*Triticum aestivum*), widely grown in Uzbekistan, is not only a major food source, but also a natural storehouse of valuable biologically active substances. Enzymes contained in the grain, in particular α -amylase, play a key role in the hydrolysis of starch and are one of the important factors determining the nutritional value of wheat. Changes in the activity of this enzyme directly affect the quality of flour products, baking technology, as well as the production of dietary and biologically active additives. Therefore, the study of α -amylase activity in wheat grains grown in Uzbekistan, the identification of its differences by variety, and its application in practice are of urgent scientific and practical importance for the pharmaceutical, food, and biologically active additive production sectors.

Propose of study: It consists of determining the activity of the α -amylase enzyme from wheat grains.

Methods and methodology: The activity of the α -amylase enzyme in wheat flour was evaluated based on the amount of free sugars (reducing sugars) formed from the enzyme-substrate hydrolysis reaction. For this, 0.5 g of wheat flour was first mixed in 10 ml of distilled water and left for extraction at room temperature for 30 minutes. Then, the mixture was centrifuged at 5,000 rpm for 10 minutes, and the supernatant extract was used as the enzyme source. The enzyme reaction was carried out in mixtures of 1 ml of enzyme extract, 1 ml of 1% aqueous starch solution (freshly prepared), and 1 ml of 0.1 M pH 7.0 phosphate buffer solution. The mixture was incubated in a water bath at 50°C for 15 minutes. To terminate the hydrolysis reaction, the test tubes were heated in boiling water for 5 minutes, inactivating the enzyme.

Results: The results of the scientific research work show that based on this method, the enzymatic hydrolysis of starch by the enzyme and the resulting free sugars (mainly maltose and glucose) were determined. The Somogyi–Nelson method has high sensitivity and has been widely used in the determination of reducing sugars. According to the results, the amylase enzyme activity of the samples was determined as follows: KB-1M 13.94±0.485, OB-M 33.94±1.29, KB-1,DB 58.41±1.94, KB-M 42.10±1.17, OB-1,DB 70.26±2.41 ml.

Conclusion: To conclusion, it can be said that as a result of the following determination of the amylase enzyme activity of the samples, the OB-1,DB sample showed a high indicator and is recommended for the determination of α -amylase activity in food samples with complex substrates (flour, grains, extracts, etc.).