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STRUCTURE OF THE ENZYME AMYLASE, FUNCTION IN THE BODY, MECHANISM OF RECIRCULATION

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ABOUT ARTICLE

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Abstract: Currently, the enzyme α-amylase is one of the important agents in the modern biotechnology industry, accounting for ~25% of the enzymes used in industry worldwide.

INTRODUCTION

Amylase and glucosidase are enzymes that occupy a central place in the hydrolysis of carbohydrates in the digestive system [1].

Gamma (γ)-radiation in Bacillus subtilis cells in studies

α-amylase has been found to significantly affect synthesis and Activity [2].

Also, the scientific study of the dynamics of the effect of gamma (γ)-radiation on α-amylase synthesis and activity is considered important in terms of the optimal use of this enzyme in the biotechnology industry [2].

The enzyme amylase is one of the enzymes of central importance in the digestive system in biological organisms.

Gamma (γ)-the biological effect of radiation is directly and indirectly – that is, through changes in structure/function of the enzyme, protein macromolecules [3].

According to the enteropancreatic blood circulation hypothesis, digestive system enzymes are absorbed into the blood through the epithelial floor of the intestinal wall, circulate through the blood vessels and secreted in the pancreas based on a reversible exocrine mechanism [4].

Studies have found the presence of "radioactive" lye residues in exocrine secreting macromolecules in the pancreas exposed to the Pancreatic Amylase enzyme "radioactive"with 35s-methionine in experimental rats, in turn it is suggested that polypeptide chain degradation may occur in amylase enzyme circulation [4].

The structure structure of the pancreatic α-amylase enzyme, the mechanisms of circulation in the digestive system were analyzed in detail by some researchers [5].

the enzyme α-amylase is one of the enzymes of functional importance in the body of bacteria, plants, invertebrates/vertebrates, humans. Pancreas and saliva contain
α-amylase starch performs the function of disconnecting α-1,4-glycoside bonds in glycogen marcomolecule and breaking down to maltose, oligosaccharides.
It has also been found that α-amylase is present in the human body in liver, brain fluid, blood, urine. However, the functional function of the enzyme α-amylase in these tissues has not been fully clarified [5].

Studies have found that the α-amylase macromolecule isolated from the bladder pancreas binds n-binding to glycans and forms glycoprotein, depending on the environmental rn value [6].

Also, the Bacillus subtilis cell, an α-amylase isolated from suckling saliva, lacks this visual activity. In this case, α-amylase, isolated from the pancreas of the pig, has a double Network-shaped link N-glycans (fetuin), A three-branched link

It is noted that it binds to N-glycans (ribonuclease) but does not form binding to Musin (o-glycan) isolated from the mammalian gland or albumin isolated from Ox whey [5].

Pancreatic α-amylase is synthesized in asinar cells of the pancreas, accumulates in an acidic environment (rn=5,5) in the form of granules and secretes into the composition of pancreatic juice with an alkaline environment (rn=8).

At the next stage, the pancreas, mixed with juice, enters the duodenum and mixes with gastric juice, which has an acidic environment, in turn, the composition of the environment is neutralized, in this case, α-amylase exhibits enzymatic activity. Typically, the environmental RN value has been found to decrease from 6.5 to 4.5 in the duodenum ~3 hours after eating the food [7].

the N-glycan-bound form of α-amylase (glycoprotein) has been found to be in the form of a zymogen granule in the pancreatic wall and the inner cavity of the small intestine. In turn, it is estimated that the N-glycan binding-forming nature of pancreatic α-amylase may play a role in the formation of pancreatic zymogen granules, as well as the process of pancreatic pancreatic exocytosis, the digestion and absorption of carbohydrates in the small intestine [5].

Studies have noted that α-amylase in the digestive system, an enzyme α-amylase synthesized in the pancreas based on experimental analysis of glycoproteins, also performs the following regulatory functions in contrast to other digestive enzymes:
1) enhanced activity of α-glucosidase, sucrose-isomaltase enzymes;
2) participation in the regulation of the process of absorption of glucose dependent on Na+ ions.

Studies also predict the realization of α-amylase expression in cells of the epithelial floor of the duodenum, which is involved in the proliferation and differentiation of epithelial cells of the small intestinal wall.

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