



**AL-MUSTAQBAL UNIVERSITY COLLEGE**

**Department of Medical laboratory Techniques Department**

*Clinical Biochemistry*

**(Determination of serum Amylase)**



**Lecturer : M. Sc. Abeer Hassan**

**M. Sc. Maisam Hassan**

## **Determination of serum Amylase**

Amylase is an enzyme belonging to the class of hydrolases. Amylase is a digestive enzyme predominantly secreted by the pancreas and salivary glands and found in other tissues at very small levels.

Amylases' main function is to hydrolyze the glycosidic bonds in starch molecules, converting complex carbohydrates to simple sugars. There are three main classes of amylase enzymes; Alpha-, beta-, and gamma-amylase, and each act on different parts of the carbohydrate molecule.  $\alpha$ -amylase breaks down long-chain saccharides, ultimately yielding either maltotriose and maltose from amylose. In human physiology, both the salivary and pancreatic amylases are  $\alpha$ -amylases and can be found in plants, and microbes. Beta-amylase is found in microbes and plants. Gamma-amylase is found in animals and plants.

### **Amylase sources in the body :-**

1. Pancreas and the Salivary glands are the major tissue sources of serum amylase .
2. Skeletal muscle , small intestine and the fallopian tubes lesser concentrations .

Digestion of starch begins in the mouth with the hydrolytic action of Salivary , Salivary amylase activity pancreatic amylase then perform the major digestive action of starch .

### **What is this test?**

This test measures the level of the enzyme amylase in your blood. Amylase helps digest carbohydrates in your food.

About 40% of the amylase in your body is made by your pancreas. The rest comes from your salivary glands. This test is used to find

out if you have a condition that affects your pancreas or salivary glands. If you have a problem with your pancreas, your amylase levels are usually higher than normal. High levels can also be caused by an infection, cancer, or even alcohol or certain medicines.

### **What do my test results mean?**

The normal range for amylase in a blood sample for an adult is 30 to 110 units per liter (U/L). If your amylase levels are higher than normal, you may have conditions. These include:

- Sudden swelling of the pancreas (acute pancreatitis)
- Chronic pancreatitis
- Cancers of the pancreas
- A sore in the pancreas
- Swelling in your abdomen (ascites)
- (intestinal infarction)
- Salivary gland swelling
- Mumps

### **Signs and symptoms**

When you have symptoms of a pancreatic disorder, such as

- 1- Severe abdominal pain,
- 2- Fever,
- 3- Loss of appetite,
- 4- Nausea.

### **Why get tested?**

Primarily to diagnose and monitor

Acute pancreatitis,

Chronic pancreatitis

or Other pancreatic diseases like pancreatic tumor in rare cases, increased amounts of amylase are released into the blood.

### Amylase properties

1. It active in PH = 6.7 – 7 .
2. It is peaceful at room temperature with one week .
3. It is active at 37 °C .
4. Activity increase with  $\text{Ca}^{2+}$

