# AL-Mustaqbal University College

## Medical laboratory Techniques Department

## Clinical Biochemistry

## (Enzyme alpha-amylase)


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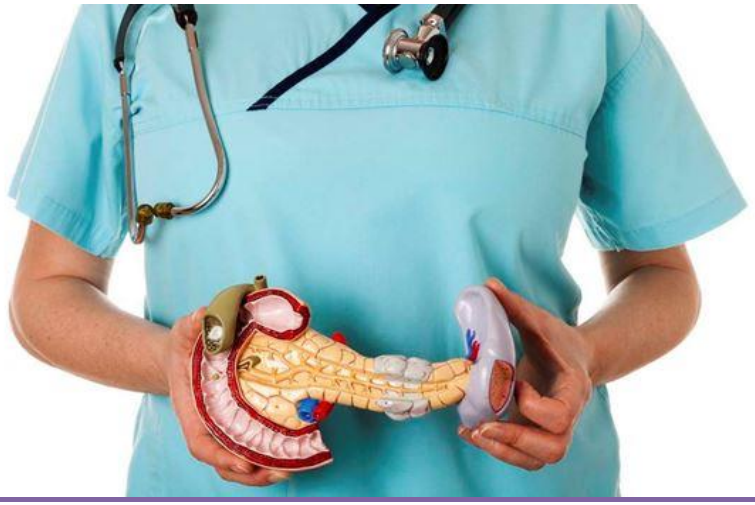
# AMYLASE TEST

An amylase test measures the amount of the enzyme "amylase" also called the (diastase) enzyme in the blood or urine, and amylase is an enzyme or protein that helps you digest food. Most of the amylase is formed in the salivary gland and pancreas, and there is a small amount of amylase in the blood and urine. A larger or smaller amount may mean that you have a disorder In the pancreas or infection.



# The importance of amylase analysis

- ✓ The amylase test is used to diagnose or monitor any problem with the pancreas, including pancreatitis.
- ✓ It can help diagnose pancreatic and salivary gland disorders.
- ✓ Blood and urine tests may be used to help monitor amylase levels in people being treated for pancreatitis or other disorders.

# Amylase test results

An elevated amylase level may indicate:

- ✓ Acute pancreatitis, a sudden and severe inflammation of the pancreas
- ✓ A blockage in the pancreas.
- ✓ Pancreas cancer.
- ✓ Diabetic ketoacidosis

A low amylase level can indicate:

- ✓ Chronic pancreatitis, which is an inflammation of the pancreas that gets worse over time and can lead to permanent damage.
- ✓ Liver disease.
- ✓ Cystic fibrosis.

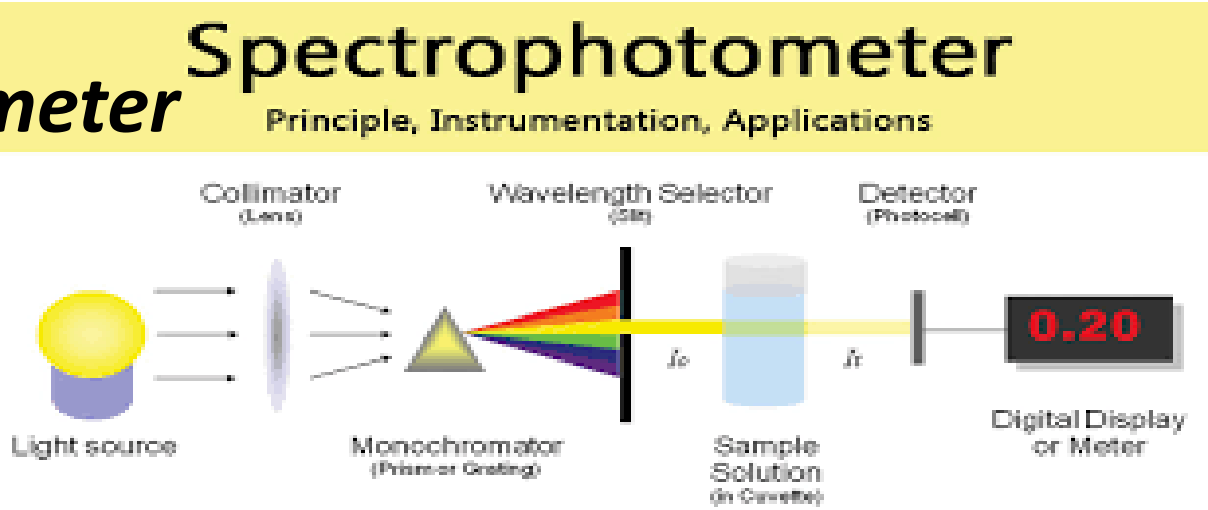
# Laboratory devices and tools

**1- *Spectrophotometer***

***2- Centrifuges***

*3- Water bath*

*4- Micropipettes*




*5- **Tubes, cups,** **cuvettes, tourniquet, syringes ,cotton, plain tubes, yellow and blue tip s***

***6-kit alpha-amylase***

# METHOD


The alpha-AMYLASE liquicolor colorimetric test comprises the substrate 2-chloro-4-nitrophenyl-maltotrioside (CNPG3). This substrate reacts directly with alpha-amylase and does not require the presence of anciliary enzymes. The release of 2-chloro-4-nitrophenol (CNP) from the substrate and the resulting absorbance increase per minute is directly related to the alpha-amylase activity in the sample.

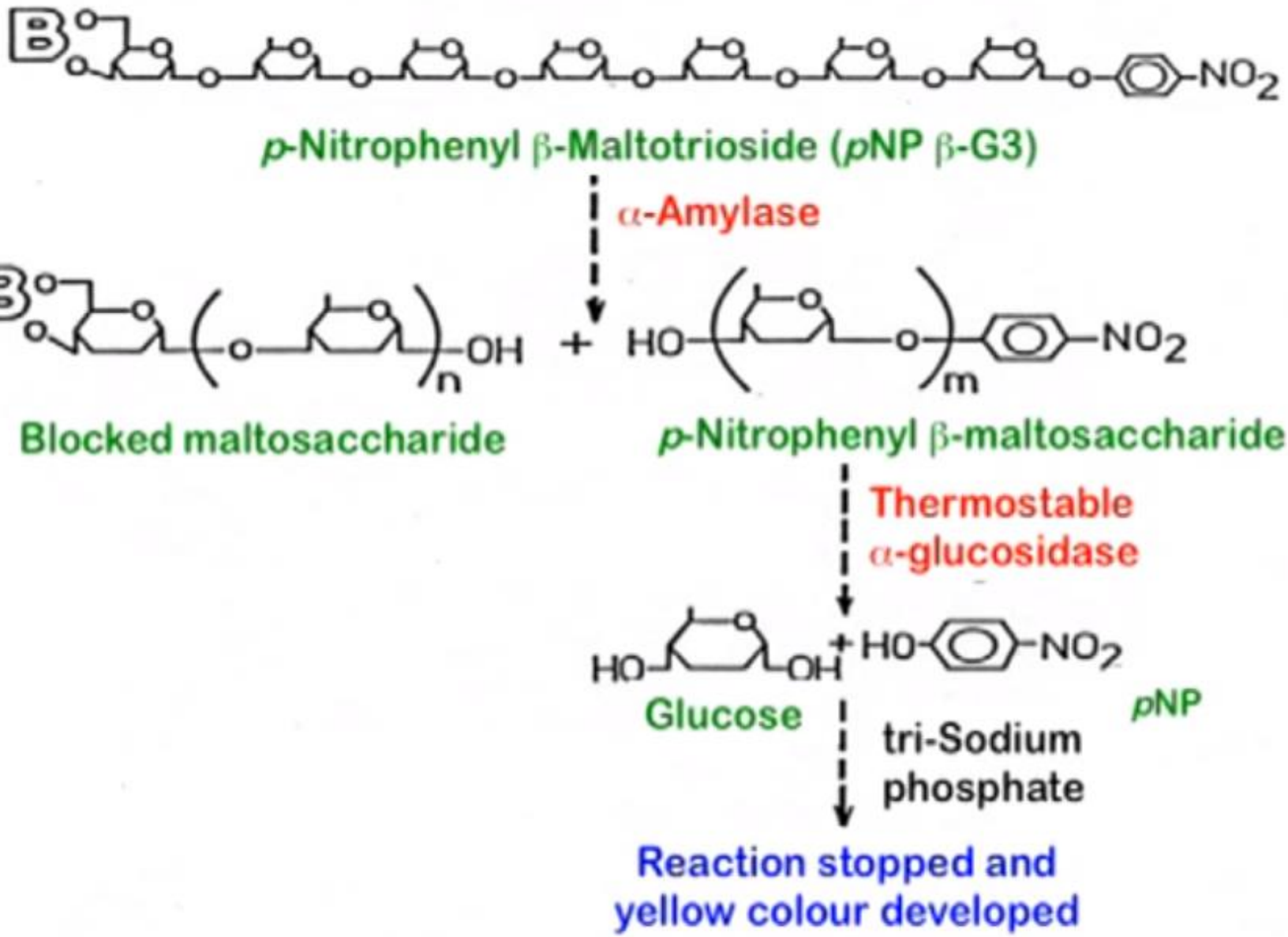
**Reaction Principle**

$$5\ CNPG_3 \xrightarrow{\text{alpha-amylase}} 3\ CNP + 2\ CNPG_2 + 3\ G_3 + 2\ G$$

**Content**

| | 12218 | 12018 | 12028 |
|---|---|---|---|
| REF | 16 x 5 ml | 12 x 10 ml | 6 x 50 ml |
| RGT | **Reagent Solution** | | |
| | MES buffer (pH 6.0) | | 36 mmol/l |
| | CNPG3 | | 1.6 mmol/l |
| | Calcium acetate | | 3.6 mmol/l |
| | Sodium chloride | | 37 mmol/l |
| | Potassium thiocyanate 253 mmol/l | | |
| | Sodium azide | | 0.095 % |

# Measurement of α-Amylase with Ceralpha Reagent



# Procedure:-

1- Take the blood from the person.

2- Centrifuge the blood to gets the serum.

3-The additions as in the shown Table:

| Pipette into cuvettes | |
|---|---|
| Reagent | 100 µL |
| Serum.AUTOCAL | 10 µL |

# Procedure:-

4-Mix well and let for 1 minutes at 37$^{o}$ C.

5- Blank distill Water (to Zero).

6-Read the absorbance for 1, 2, 3 minutes wave length (405) nm.

# Calculations:-

Con. of test = (ΔA/min of test/ ΔA/min of standard) *10.183 U/L

$1U/L = 16.67 * 10^{-3} \mu kat/L$

1μkat/L=60 U/L

# Normal value:-

30-90 units / liter

0.5-1.5 µkat / liter

# Thanks for your attention