

**By**  
**Dr.Eirteham Saeed**

### **Determination of CHOLESTEROL**

It is the main lipid found in the blood, bile & brain tissues. It is also one of the most important steroids of the body & is a precursor of many steroid hormones. Two thirds of cholesterol present in the blood is esterified. The liver metabolizes the cholesterol & it is transported in the blood stream by lipoproteins.

#### **Principle**

Enzymatic colorimetric determination of total cholesterol according to the following reactions:

cholesterol ester + H<sub>2</sub>O ----- cholesterol ester -----→ cholesterol + Fatty acid

cholesterol + O<sub>2</sub> ----- cholesterol Oxidase-----→ 4-cholesten-3-one+H<sub>2</sub>O

Glycerol- +O<sub>2</sub> -----GPO-----→ Dihydroxyacetone phosphate + H<sub>2</sub>O  
3-phosphate

2H<sub>2</sub>O<sub>2</sub> +Phenol + 4-Aminoantipyrine -----peroxidase-----→ -Red quinone+4H<sub>2</sub>O

### Procedure

Reagent (1000 µL) in the ( Blank, Standard, Sample)

Standard (10 µL) in the( Standard)

Serum (10 µL) in the (Sample)

Mix and Incubate for 5 minutes at 37°C. Measure the change in absorbance of standard and sample against reagent blank , wavelength (630 nm).

### Calculation

**cholesterol Con. (mg/dl)  $\approx$  Abs of sample/ Abs of standard  $\times$  200**

### Normal range

Cholesterol rang (150 – 220 mg/dl)

### Clinical Significance

**Increase cholesterol levels are associated with the following condition:-**

- A . Diabetes
- B .Hypothyroidism
- C .Nephrotic syndrome
- D. Cirrhosis
- E .Hyperlipidemia

**Decrease cholesterol levels are associated with the following condition :-**

- A .Hyperthyroidism
- B .Malnutrition
- C. Anaemia
- D. Liver disease

