Department of Anesthesia Techniques
Title of the lecture:- Cholesterol testing
Asst. Lec. Ahmed B. Mahdi
Asst. Lec. Halah T. Mohammed
Ahmed.baseem@mustaqbal-college.edu.iq
halah.thamer@mustaqbal.college.edu.iq

Cholesterol testing

Cholesterol testing measures how much of it's present in the blood. Cholesterol testing can help evaluate heart health since excess cholesterol is a risk factor for cardiovascular problems like heart disease and stroke.

The 3 main types of cholesterol include:

- High-density lipoprotein (HDL) is one of the two main lipoproteins. HDL is often called "the good cholesterol."
- Low-density lipoprotein (LDL) is the other main lipoprotein. LDL is often called "the bad cholesterol."
- Very-low-density lipoproteins (VLDL) are particles in the blood that carry triglycerides.

A summary reviewing general approaches to cholesterol screening is listed below

DEMOGRAPHIC GROUP	RISK FACTORS	SCREENING FREQUENCY
Children	None	Once between ages 7-11; again between 17-21
Children	1+	Every 1-3 years starting when risk factor is identified
Children	High risk of familial hypercholesterolemia	Age 3, between 9-11, and age 18
Adolescents and adults	1+	At least every 5 years; often annually
Men age 20-45 Women age 20-55	None	Every 5 years
Men age 45-65 Women age 55-65	None	Every 1-2 years
Men and women over 65	0+	Annually

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Method:

CHOLESTEROL

METHOD – CHOD-PAP
PRODUCT CODE – LC04

ANAMOL
THE ORIGINAL MAKERS

INSTRUCTIONS FOR USE

INTENDED USE: Test for estimation of Cholesterol in serum / plasma using CHOD-PAP method.

SUMMARY AND PRINCIPLE

Cholesterol levels are important in the diagnosis and classification of hypolipoproteinaemias. Measurement of serum cholesterol levels can serve as an indicator of liver function, biliary function, intestinal absorption, tendency towards coronary artery disease, thyroid function and adrenal disease. Cholesterol is a reagent set for determination of Total Cholesterol based on enzymatic method using Cholesterol Esterase, Cholesterol Oxidase and Peroxidase.

$$\text{Cholesterol esters} \xrightarrow{\text{CEH}} \text{Cholesterol + Fatty Acids}$$
$$\text{Cholesterol + } O_2 \xrightarrow{\text{CHOD}} H_2O_2 + \text{Cholestenone}$$
$$H_2O_2 + \text{Chromogen} \xrightarrow{\text{POD}} \text{Red Dye + } H_2O$$

KIT COMPONENTS

Reagent 1: Cholesterol Reagent
Reagent 2: Cholesterol Standard (200 mg/dL)

REAGENT PREPARATION, STORAGE & STABILITY

Cholesterol is single ready to use reagent. No preparation of working solution is required prior to use. The kit should be stored at 2-8 °C and is stable till the expiry date indicated on the label.

PRECAUTIONS & HANDELING

The reagents/samples should be handled by qualified personnel only. Discard reagent/sample as per good laboratory practices and local regulatory requirements. Read the instructions given on the labels and instructions for use carefully before using the kit. The kit is intended for in-vitro diagnostic use only. Don't freeze the reagent. Do

Chromogen	0.5 mmol/l
Stabilizers and inactive ingredients.	-

ASSAY PROCEDURE

	Blank	Standard	Test
Reagent	1000 µl	1000 µl	1000 µl
Standard	NA	10 µl	NA
Sample	NA	NA	10 µl
Mix the reagent and sample/standard in the above-mentioned ratio.			
Incubate the assay mixture for 10 minutes at 37 °C.			
Aspirate reaction mixture into flow cell and measure the absorbance.			
The final colour is stable for 2 hours if not directly exposed to light.			

CALCULATION

$$\text{Total Cholesterol (mg/dL)} = \frac{\text{Abs. of sample x 200}}{\text{Abs. of standard}}$$

REFERENCE VALUES FOR NORMAL PEOPLE

Desirable Cholesterol - <200 mg/dL.
Borderline High Cholesterol - 200-239 mg/dL.
High Cholesterol - >240 mg/dL.

Equipment:

1- Cholesterol Reagent.
2- Cholesterol Standard.
3- 1000µl Pipette.
4- 10µl Pipette.
5- Tips.
6- Dry tubes.
7- Serum blood.
8- Timer.

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Results:

Less than 200 mg/dl – Natural

200 – 239 mg/dl – This is considered a borderline

Higher than 240 mg/dl –This high