



Introduction to Advance Clinical Biochemistry Laboratory and Safety Measures

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Introduction

Advance clinical biochemistry lab is a critical field that helps in diagnosing diseases and monitoring the progress of treatment.

Common Laboratory Tests

Blood Glucose Test

Test that measures the level of glucose (a type of sugar) in your blood. Used to measure blood sugar levels in people with diabetes.

Lipid Profile Test

A blood test that measures the amount of cholesterol and triglycerides in your blood. Used to help identify risk factors for heart disease.

Electrolyte Panel

A blood test that measures the levels of sodium, potassium, and other electrolytes in your blood. Used to help diagnose and monitor treatment for a variety of conditions

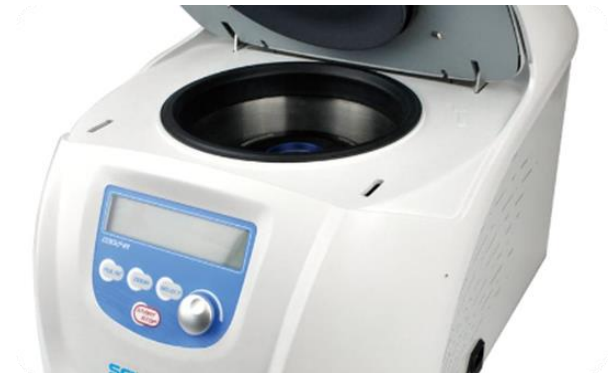
1-Spectrophotometer

An instrument used to measure the amount of light that a sample absorbs at different wavelengths. Used to measure the concentration of compounds in a sample.



2-Centrifuge

An instrument used to separate fluids by spinning them at high speed. Used to separate the different components of a blood sample.



Safety Measures in the Laboratory

1-Personal Protective Equipment (PPE)

Protective equipment like gloves, lab coats, and protective eyewear are essential for preventing exposure to hazardous chemicals and materials.

2-Waste Disposal

Proper waste disposal is necessary to minimize the risk of exposure to hazardous chemicals. Chemicals and biohazardous waste must be properly labeled, stored, and disposed of according to regulations.

3-Cleaning and Disinfecting

Cleaning and disinfecting are crucial for maintaining a safe and healthy lab environment. All surfaces and equipment must be routinely cleaned and disinfected to prevent the spread of infectious agents.

Importance of Safety Measures

"Safety measures are essential for preventing accidents and ensuring the well-being of everyone working in and around the lab. The use of protective equipment, proper cleaning and disinfecting procedures, and safe waste disposal practices can prevent exposure to harmful chemicals and materials and minimize the risk of injuries."

Overview of blood collection process

Blood collection is a simple process that involves the drawing of blood from a patient's vein. Understanding the process is essential in taking necessary precautions and reducing the risk of adverse effects.

Before the Procedure

Patient information is verified, and the patient's medical history reviewed.

The Process

The phlebotomist identifies the patient's veins, cleans the site, inserts a needle, and collects the blood in the appropriate tubes.

After the Procedure

The patient is monitored for potential complications, and the collected blood is labelled and transported to the appropriate laboratory.

Equipment Needed for Blood Collection

The equipment required for blood collection varies depending on the purpose of the collection. Essential equipment includes a tourniquet, alcohol swabs, needles, tubes. Disposable and sterile equipment helps prevent infections

Tourniquet

Used to stop blood flow and make veins more visible and accessible.

Needles and tubes

Used to collect and transport blood samples.

Alcohol Swabs

Used to sterilize the site and prevent infection after collection.



Safety Precautions During Blood Collection

The blood collection procedure carries some risks, such as infection, injury, or reaction from the patient. Following stringent safety protocols is essential in mitigating these risks. Keeping the equipment sterile, correctly labelling collected samples and taking a patient's full medical history reduces the risk of adverse reactions.

Complying with Infection Control Standards

Phlebotomists wear gloves and mask, and the collection area is thoroughly disinfected

Proper Needle Disposal

Needles must be immediately disposed of in appropriate sharps containers.

Preparation of Blood Sample

Blood contains: RBCs, WBCs and platelets

Serum and plasma are prepared from whole blood by centrifugation.

After centrifugation of blood the blood . separate into three layers

In biochemical tests, one of three type of blood sample can be used:

1. Whole blood (HAIC)
2. Serum
3. Plasma

Difference between Serum and plasma

Blood serum:

- *Serum is the same as plasma except it doesn't contain clotting factors (such as fibrin)
- *Mainly use in chemistry lab & serology.

Blood plasma:

- *Contains clotting factors
- So, serum and plasma all has the same contents of electrolytes, enzymes proteins, hormones except clotting factors

