



Medical laboratories instruments



Laboratory test Tubes

Dr. Ahmed Jamil Al- Taie

Laboratory: 4

First stage

Laboratory test Tubes

The accuracy of laboratory testing depends on the quality of the specimen submitted. Proper specimen collection, identification, and transport determine the accuracy and utility of the test results.

Sample collection method:

Sample collection using **test tubes**, **containers**, and **swabs** depends on the type of sample being collected and the purpose of testing

- 1. Blood Collection Tubes** (**with or without anticoagulants**)
- 2. Sterile Containers** Used for (**Urine, stool, sputum, biopsy specimens**)
- 3. Swabs** Used for (**oral, Nasal, throat, vaginal, wound, skin**)

1- Blood Sample Collection Tubes, Colors

VENOUS BLOOD COLLECTION TUBES

GEL+CLOT ACTIVATOR
GLUCOSE TUBE
PRO COAGULATION TUBE
EST TUBE
EDTA TUBE
HEBARIN
PT TUBE
PLAIN TUBE





**GEL + BCA TUBE
FOR SERUM COLLECTION**



**NO ADDITIVE TUBES
FOR SERUM COLLECTION**



**HEMO REPELLENT
COATED TUBE
FOR SERUM COLLECTION**



**EDTA TUBE
FOR WHOLE
BLOOD COLLECTION**



**ESR TUBE
FOR WHOLE
BLOOD COLLECTION**



**PT/ PTT TUBES /
CITRATE TUBES
FOR PLASMA COLLECTION**



**HEPARIN TUBE
FOR PLASMA COLLECTION**



**GLUCOSE TUBES
FOR PLASMA COLLECTION**

Blood Sample Collection Tubes: used in medical and laboratory can be classified two type based on:

1- Test tubes contain anticoagulant substances: These tubes prevent blood from clotting, allowing for plasma or whole blood analysis. Common types of anticoagulant include: (**EDTA, Heparin, Citrate, Oxalate/Fluoride**)

Purple (EDTA Tube), Green Top (Heparin Tube), Light Blue Top (Citrate Tube), Gray Top (Fluoride/Oxalate Tube)

2- Test tubes not contain anticoagulant substance: These tubes allow blood to clot, producing serum for testing.

Red Top, yellow top tubes

1- Blood Sample Collection Tubes with Yellow Cap

Cap Color: Yellow Cap

This type of test tube is used in most analyses and laboratory tests this tube does not contain an anticoagulant because it is designed to allow the blood to clot naturally before centrifugation.

Test tube with yellow cap can use this tube are the following:

- Biochemistry analyses such as; Fats, kidney and liver function tests, thyroid tests and vitamins such as vitamin B12
- Microbiology and immunology tests.



Blood Sample Collection Tubes with Yellow Cap

- Test tubes yellow cap Without anticoagulant
- used to serum samples



2- Blood Sample Collection Tubes with Red Cap

Cap Color: Red

This tube contains silica particles inside it as a clot activator to separate blood serum,

Blood Sample Collection Tubes with Red Cap used
it can be used in hormone tests, and toxicology tests



3- Blood Sample Collection Tubes with Purple Cap

Cap Color: Purple Cap

The Purple blood sample collection tubes contain an anticoagulant called EDTA, as this substance binds to calcium in the blood, preventing it from clotting this tube obtain on plasma samples.

Test tube with Purple cap can use this tube are the following:

- Blood complete CBC test.
- ESR erythrocyte sedimentation rate.
- HbA1C cumulative blood sugar test.

Dealing with this type of test tube requires making sure that the blood is mixed with the anticoagulant, so it must be stirred for 8 minutes to mix well, by turning it frequently.



Blood Sample Collection Tubes with Purple Cap

Contain EDTA anticoagulant

Used to plasma samples



4- Blood Sample Collection Tubes with Dark Green Cap

Cap Color: dark green cap

This tube contains sodium heparin which works as an anticoagulant of blood samples. These tubes are used for **plasma or whole blood testing**.

Blood Sample Collection Tubes with Dark Green Cap used to

- ammonia
- Insulin.
- Renin, and aldosterone
- Cytogenetic studies (chromosomal analysis).



5- Blood Sample Collection Tubes with gray Cap

- Cap Color: Grey
- This test tube contain **sodium fluoride and heparin** which help prevent glycolysis (the breakdown of glucose), ensuring accurate blood sugar measurements.
- Suction Volume: 3ml – 5ml
- Blood Sample Collection Tubes with gray Cap used blood collection for the test like blood glycose, sugar tolerance and Lactate measurement



6- Blood Sample Collection Tubes with Blue Cap

Cap Color: Blue Cap

This test tube contains sodium citrate; As a reflective agent for blood clotting, Sodium citrate binds to calcium ions to prevent coagulation during blood collection

Test tube with Blue Cap can use this tube are the following:

used in blood clotting tests, calculating bleeding time, like PT (Prothrombin Time), APTT (Activated Partial Thromboplastin Time)



7- Blood Sample Collection Tubes with black Cap

- Cap Color: Black Cap
- These tubes contain **sodium citrate** as an anticoagulant (usually in a **4:1 ratio of blood to citrate**).
- Blood Sample Collection Tubes with black Cap**
used: blood collection and anticoagulation for
Automated Erythrocyte Sedimentation Rate (ESR)
Analyzers sedimentation rate test



8- Blood Sample Collection Tubes with Pink Cap

Cap Color: Pink Cap

This test tube contains the anticoagulant substance EDTA anticoagulant that prevents blood from clotting by binding calcium.

Blood Sample Collection Tubes with Pink Cap used:

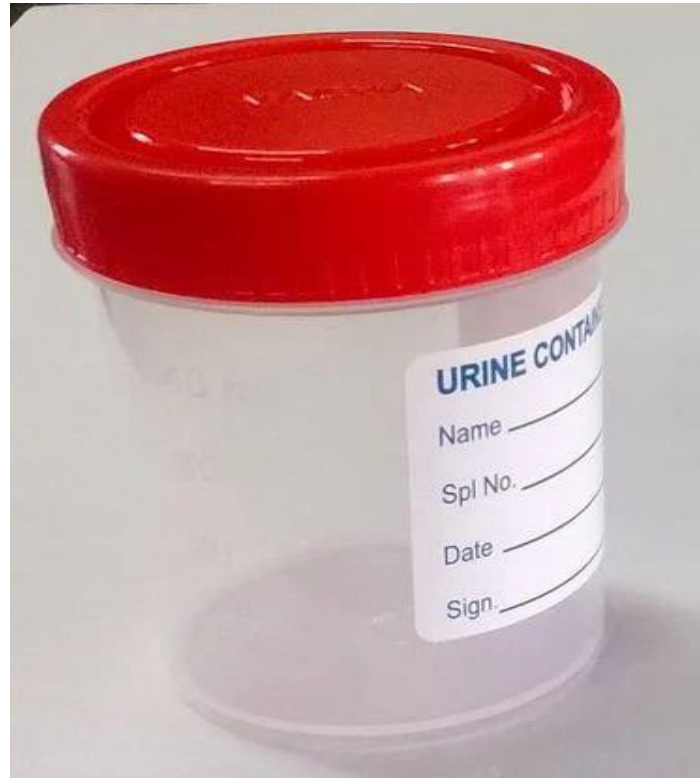
used to examine the patient's blood group, then compare it with other types to reach the appropriate type for the **blood**

transfusion, or the so-called cross match, As for the method of its use, **Antibody Screening**: To check for immune reactions.



Sterile Urine containers

used to collection the urine samples for general urinalysis, microbiological testing, and culture tests.



Sterile Stool samples:

used to collect and transport stool (feces) samples for laboratory testing. It is **commonly used in medical diagnostics for detecting infections, digestive disorders, or gastrointestinal conditions.**



sputum container

sterile container used for collecting and transporting sputum (**mucus coughed up from the lungs samples**) for laboratory analysis. It is commonly **used to diagnose respiratory infections. example: tuberculosis (TB), pneumonia, and other lung diseases.**



Swabs collection samples

used for various diagnostic test, forensic and research purposes There are different types of swabs based on material and intended use, the Cotton Swabs used collection samples (oral, Nasal, throat, vaginal, wound, skin)



Types of Swabs

Flocked Swab



Cotton Swab



Foam Swab



Rayon Swab







Thank
You

A small red rose with green leaves, positioned below the 'Thank You' text. The rose is smaller than the one on the left and has a similar vibrant red color and green foliage.