

13/11/2024

classmate

Date _____

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VACUTAINERS

A vacutainer blood collection tube is a sterile glass or plastic test tube with a coloured rubber stopper creating a vacuum seal inside of the tube. Facilitating the drawing of predetermined volume of blood.

It was invented by Joseph Kleiner in 1949.

Vacutainer tube may contain additive designed to stabilize and preserve the specimen prior to analytical testing.

COMPONENTS

Tube : Glass or plastic

Needle : Attached to tube for blood collection.

Stopper : Rubber or plastic

Label : Identifies patient, date, time.

(Creates vacuum seal.)

PRINCIPLE

The vacutainer needle is double ended: the inner end is encased in a thin rubber coating that prevents blood from leaking out of the vacutainer tubes are changed during a multi-draw and the outer end which is inserted into the vein.

When the needle is screwed into the translucent plastic needle holder, the coated end is near the holder.

When a tube is inserted into the holder, the rubber cup is punctured by this inner needle and the vacuum in tube pulls blood through needle and into the tube. The filled tube is then removed and another can be used. The amount of air evacuated pre-determines how much blood will get filled.

Blood collection tubes expires because over time the vacuum is lost and blood will not be drawn into the tube when the needle punctures the cap.

TYPES

Colour of each tube's cap indicates which additive is used.

COLOUR

ADDITIVE

USES

Blood culture bottle.

Sodium polyane.

→ usually draw first for minimal risk of contamination.

→ two bottles are collected in one draw.

→ for aerobic and anaerobic organisms

✓ Blue (Light).

^{hi} Sodium citrate.

→ Coagulation test such as PT, TT.

→ tube must be 100% filled

Plain red

NO

→ Serum: total

Complement activity, cryoglobins

Gold.

Clot activator &

→ serum separating tube:

serum separating gel. → most endocrine, serology test including

HIV and hepatitis.

Orange.

Clot activator and

Serum separating gel.

→ Rapid serum separating tube

✓ Dark green.

Sodium heparin.

^{Chromic potassium} Chromosome testing, HLA typing, ammonia.

Light green.

Lithium heparin.

plasma tube inversion prevent clotting.

✓ Lavender.

EDTA

CBC, ESR, Coombs test, plasma antibodies flow cytometry, blood (v) of leucolimus and cytoplasts.

✓ Pink.

K₂ EDTA.

Blood typing incl. cross match, direct Coombs test, HIV viral load.

✓ Royal blue.

EDTA

Tissue elements, heavy metals, toxicology.

Tan

Sodium EDTA

Lead

✓ Grey.

Fluoride oxalate.
→ sodium fluoride.

✓ Glucose, lactate, toxicology.

→ potassium oxalate.

yellow

Acid-citric-anticoag.

Tissue typing, DNA studies, HIV cultures.

white.

separating gel and EDTA.

PCR for adenovirus, toxoplasma and HHV-6.

✓ Black

sodium citrate.

Pediatric ESR.

Brown

acid.

Red.

Serology without an anticoagulant.