

Medical Microbiology and Immunology Department

IBL practical revision

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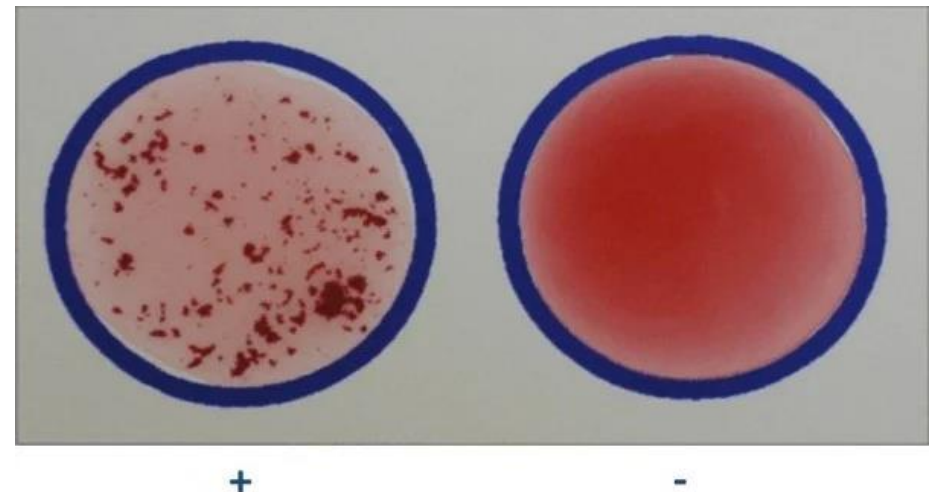
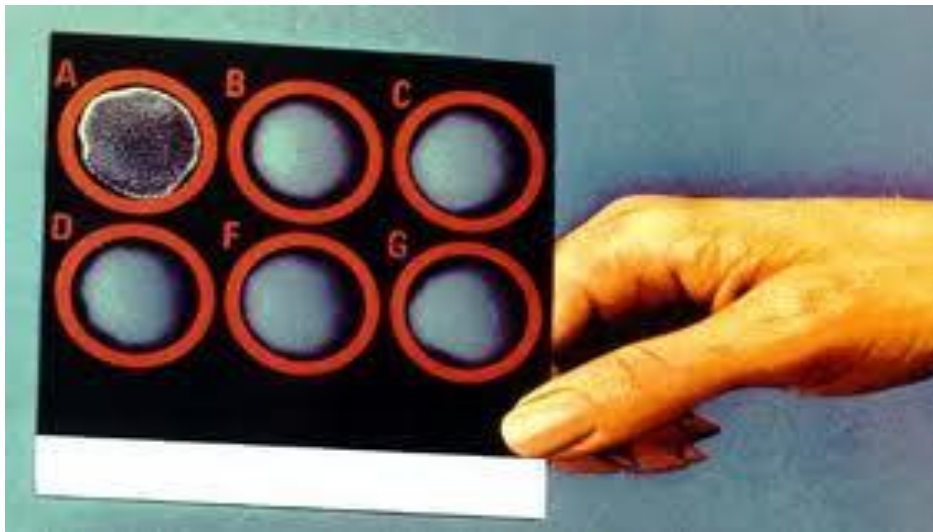
Type of the test:

Direct (active) slide agglutination test.

Uses:

1-Blood grouping.

2-Identification of unknown organism from clinical specimens
(serotyping of organisms).



Type of the test:

Direct (active) tube agglutination test.

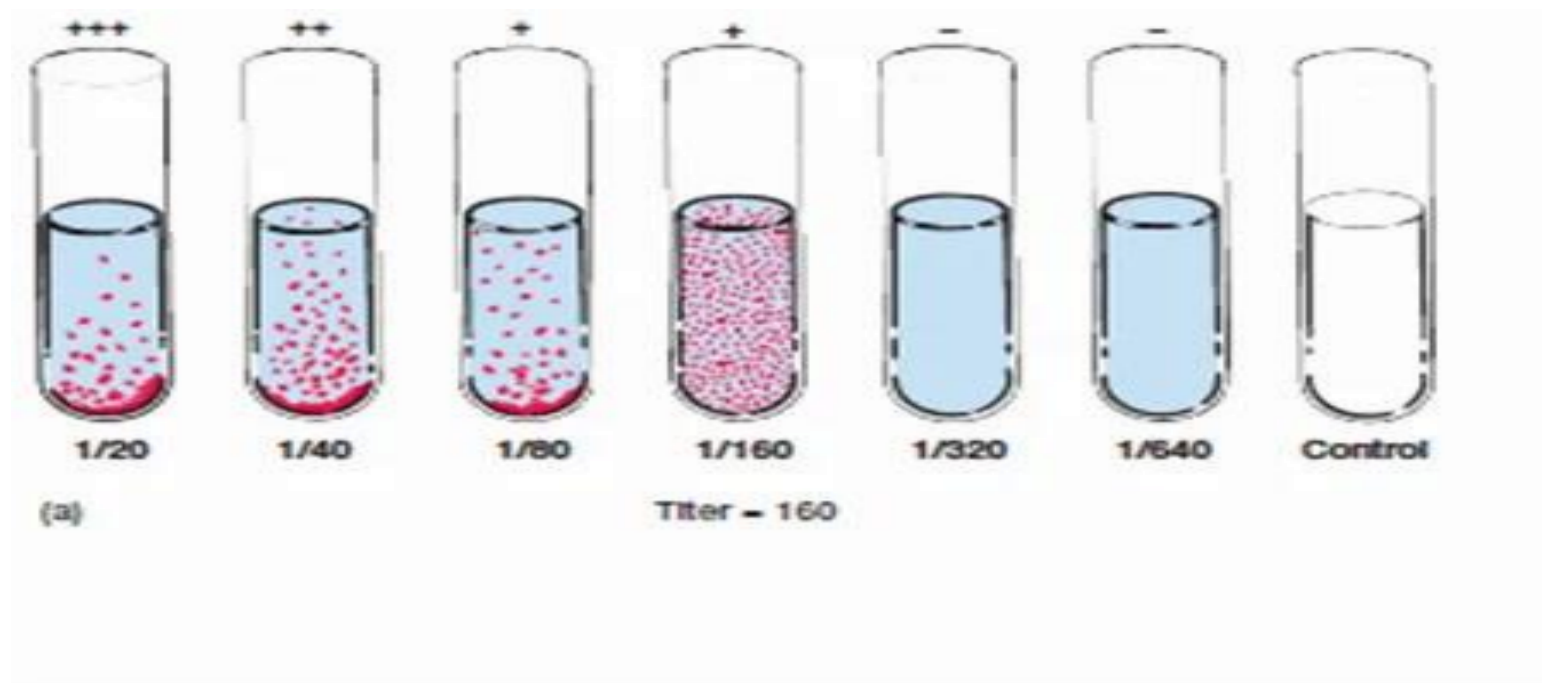
Uses:

1-Widal test: used for diagnosis of Typhoid Fever.

2-Brucella agglutination test: used for diagnosis of Brucellosis.

3-Weil-Felix reaction: used for diagnosis of rickettsial disease.

The titer is : 160



TYPE of the test:

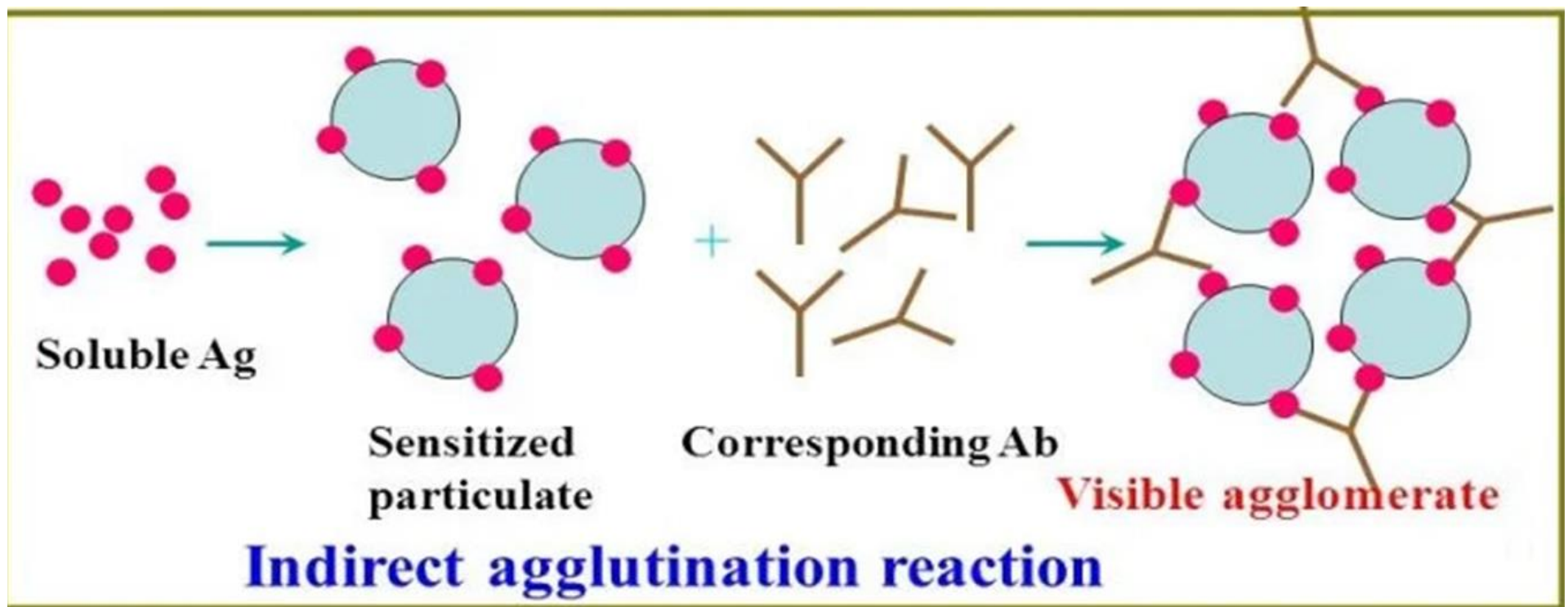
Indirect (passive) agglutination test.

Uses :

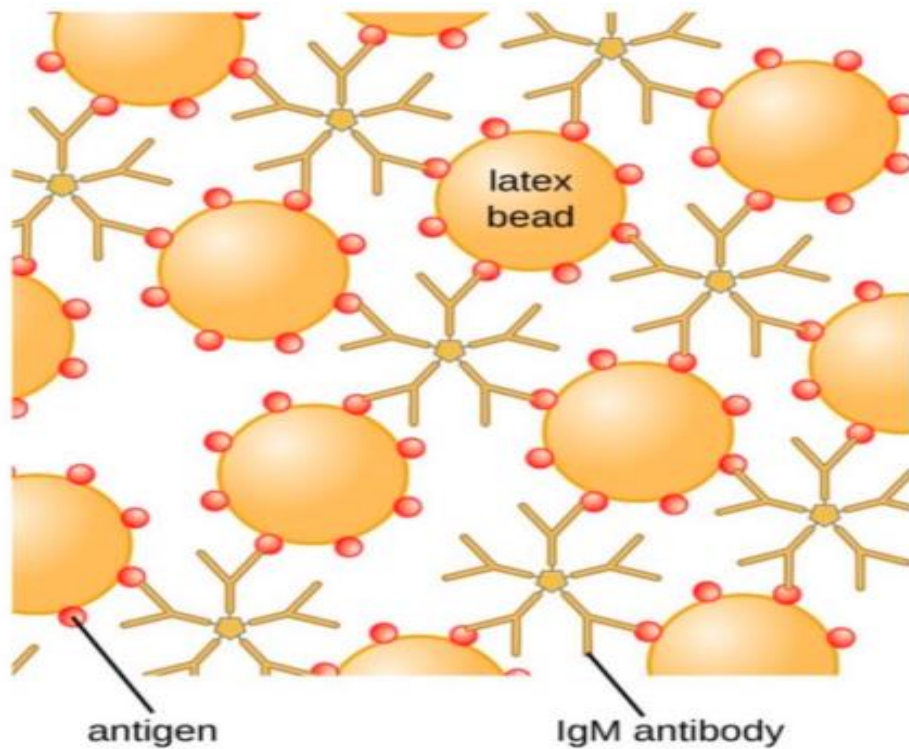
1- Detection of soluble Ag in patient's serum.

Example of the test:

Latex agglutination test used in detection of patient's CRP.

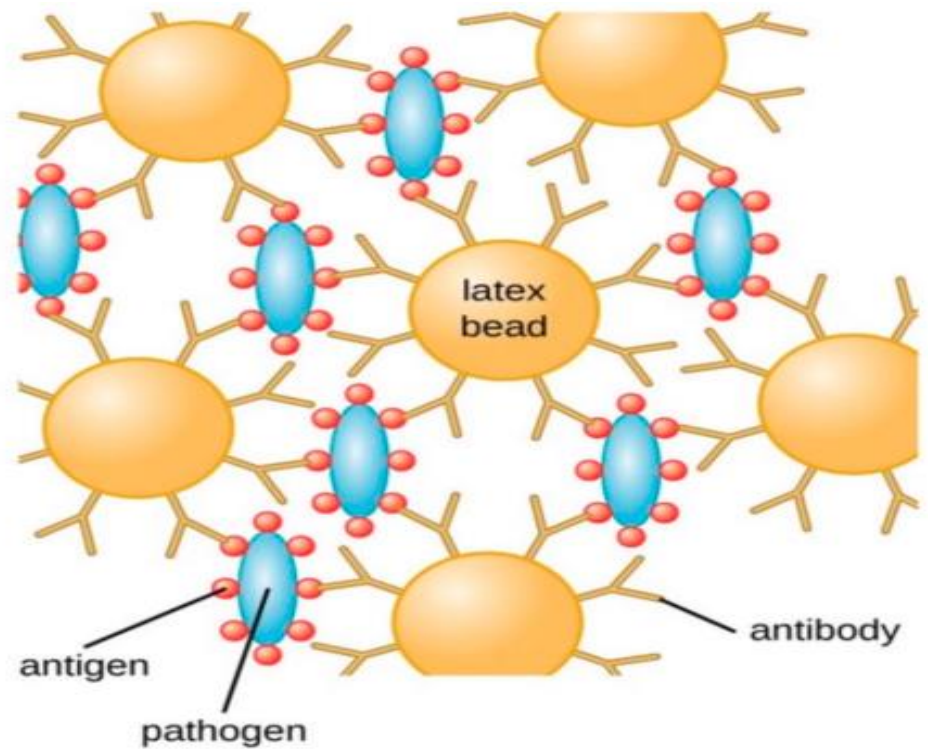


The main difference between the passive and reverse passive agglutination is which of (Ag -Ab) is fixed on the carrier particles.



(a) positive agglutination test for antibodies

Passive Agglutination Test



(b) positive agglutination test for antigens

vs. Reverse Passive Agglutination Test

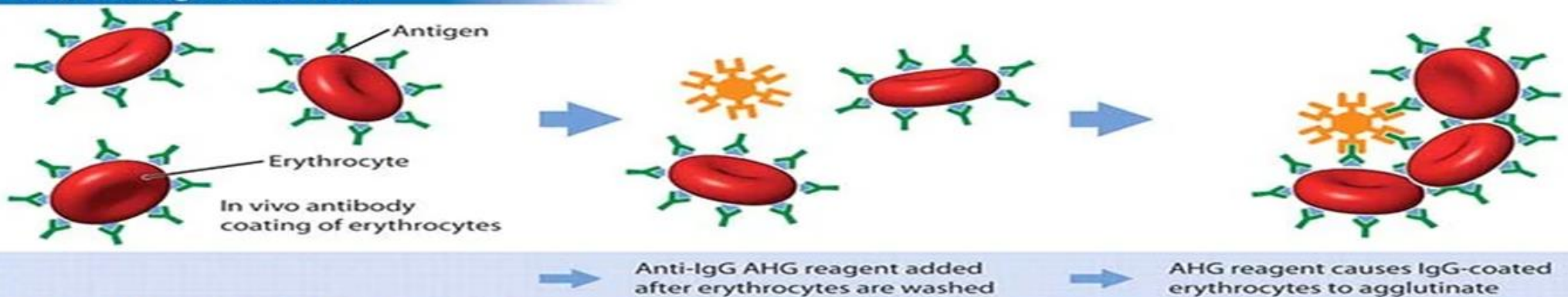
The test is : Coomb's test

Type of the test: Agglutination test.

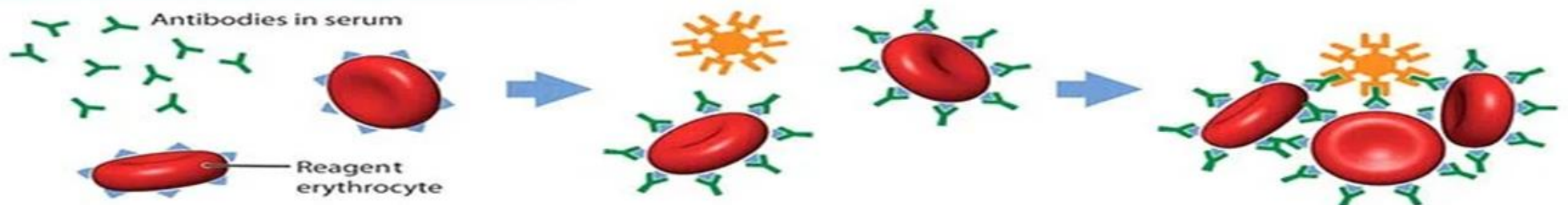
Coomb test
incoompet

- **Uses:** Detection of **i**ncoompet **a**ntibodies that do not agglutinate particulate Ag in saline.
- **Example of the diseases :** Detection of the incompet anti-Rh antibodies (erythroblastosis fetalis syndrome) and incomplete antibodies in brucellosis infection and other diseases.

Direct Antiglobulin Test



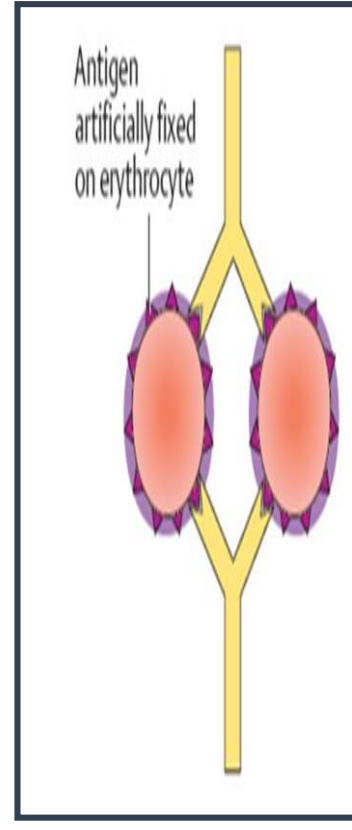
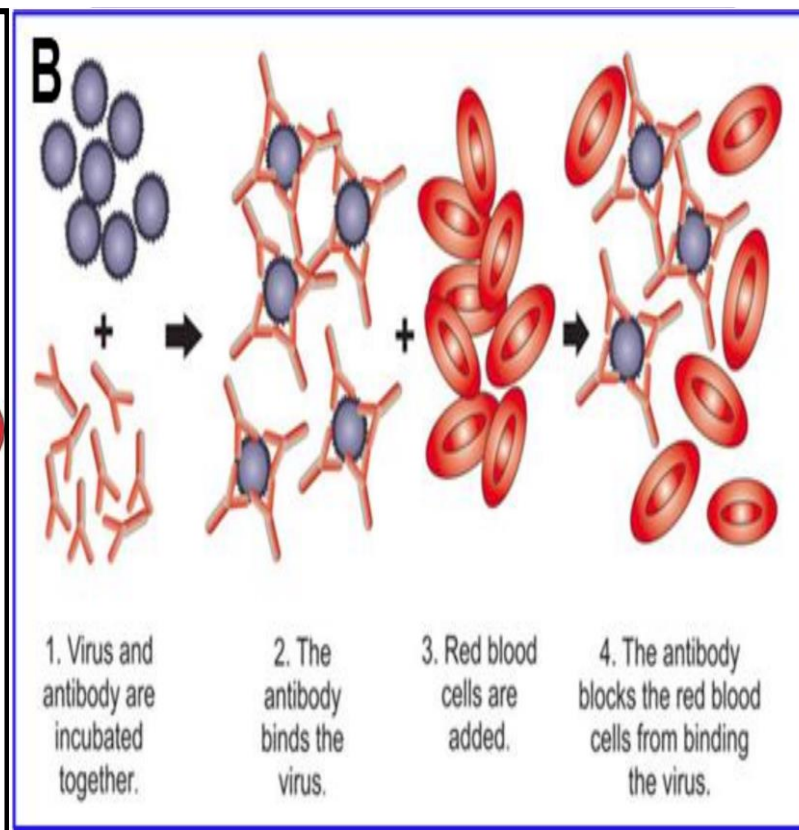
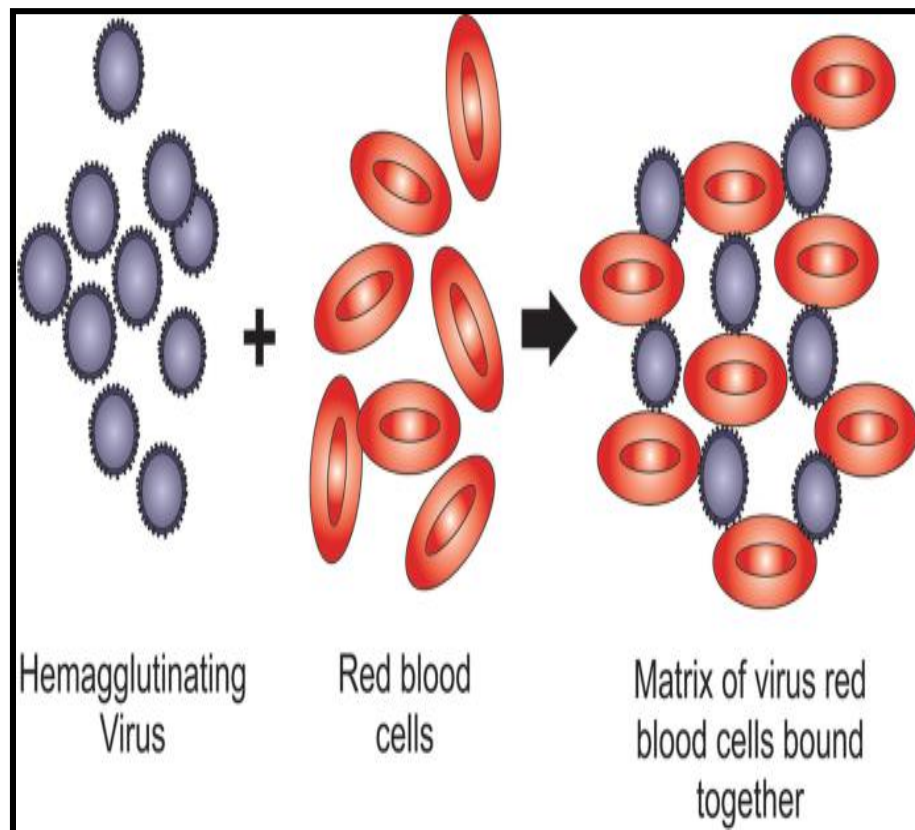
Indirect Antiglobulin Test



The test is : Hemagglutination & hemagglutination inhibition tests

Type of the test: can act as passive or active agglutination test.

Uses: Diagnosis of some viral and bacterial diseases

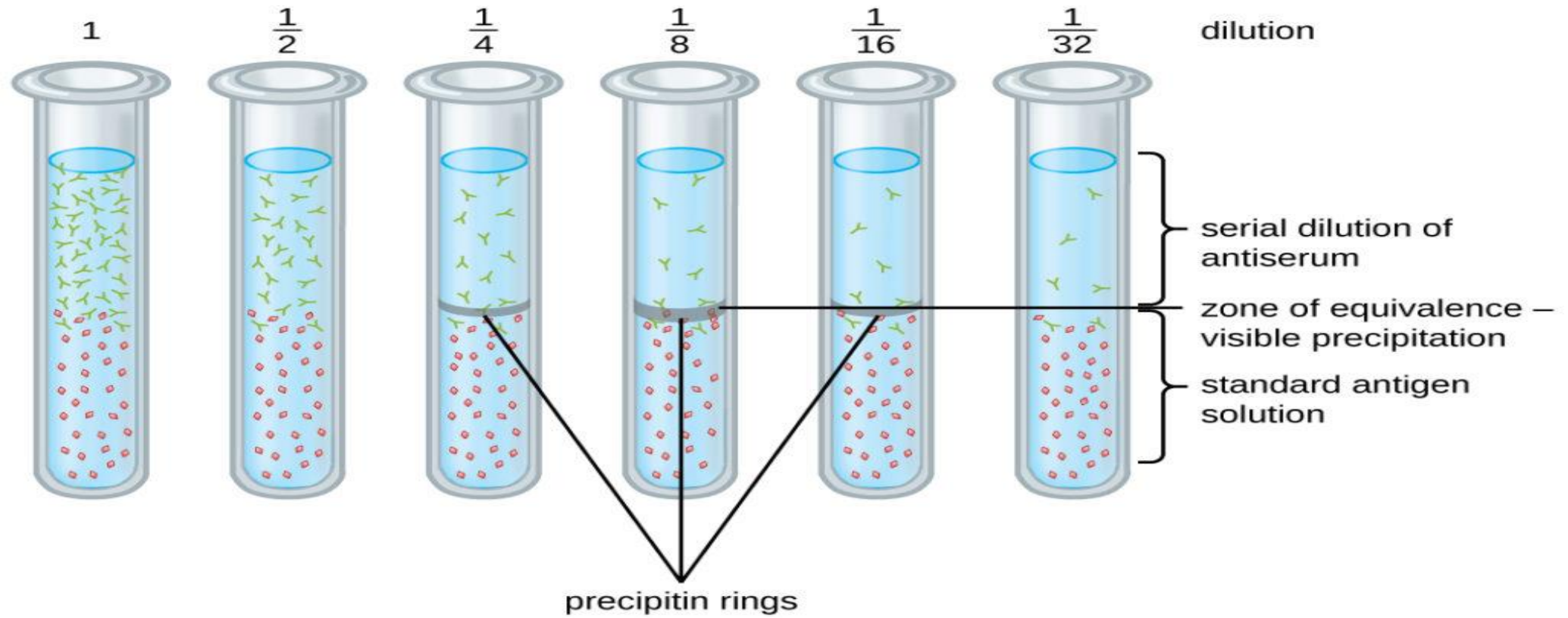
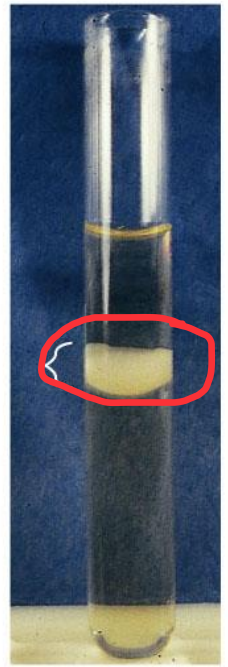
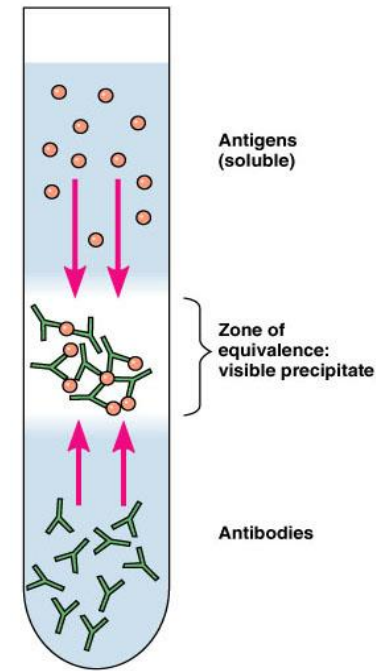


The test is : Ring test ○

Type of the test: Precipitation test.

Uses:

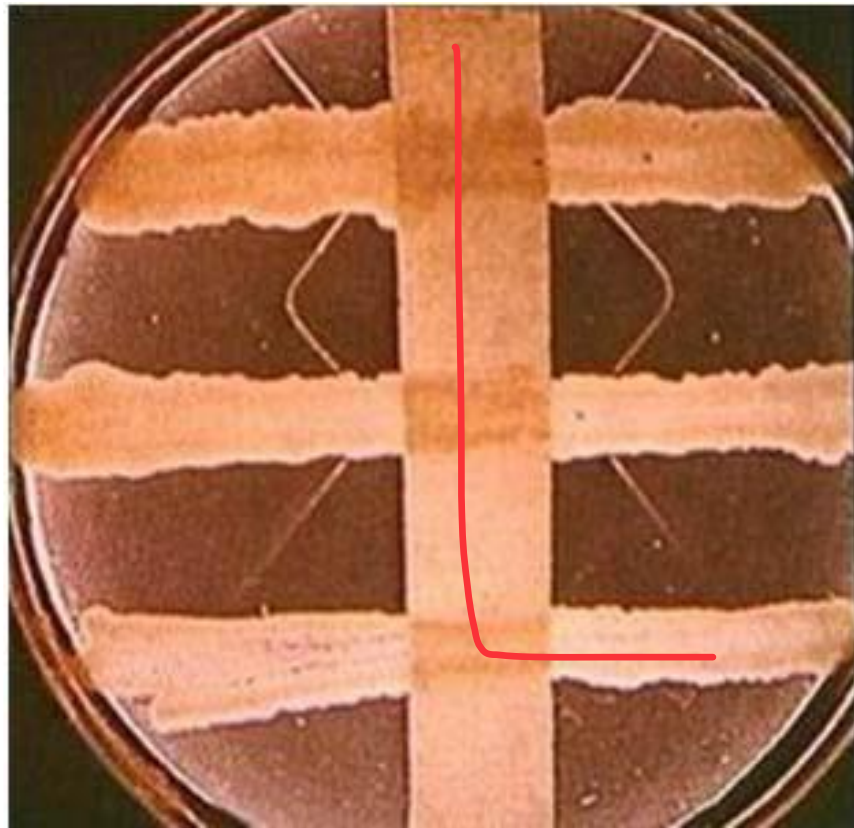
- Typing of bacteria: Pneumococci, streptococci
- Detection of anthrax by Ascoli's test.



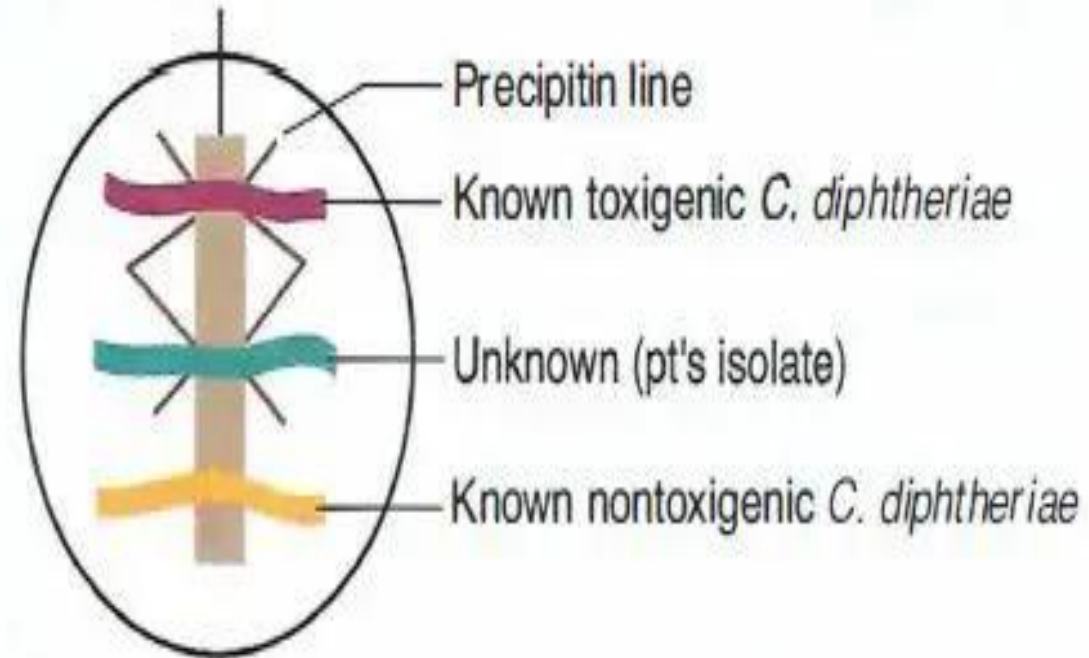
The test is : Elek's test

Type of the test: Double diffusion precipitation test.

Uses: To detect the toxigenic strain of *Corynebacterium diphtheriae*.



Filter paper strip with *C. diphtheriae* antitoxin



The test is : Single radial immune diffusion plate

Type of the test: Single radial immune diffusion precipitation test.

Uses: Estimation of **quantity** of immunoglobulins and complement in human serum.



Wasserman test (negative)

The test is : Wasserman test

Type of the test: Complement fixation test.

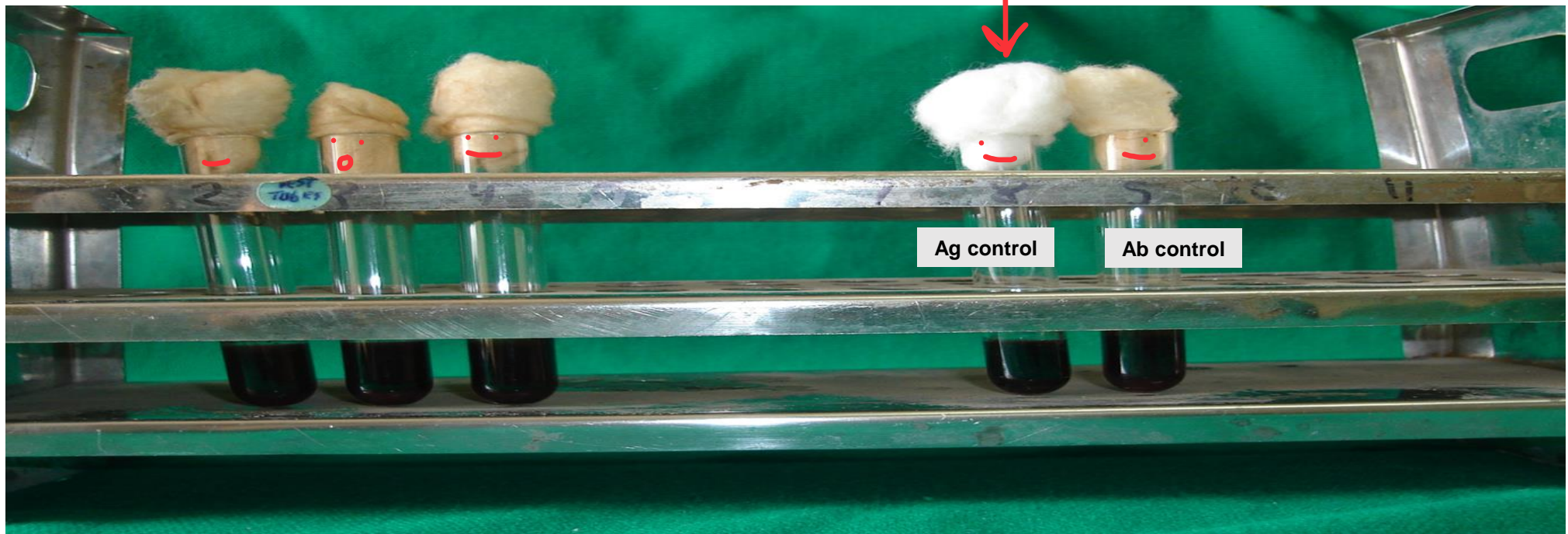
Uses: Diagnosis of syphilis

Interpret the test: **Negative case:** haemolysis in all test tubes + haemolysis in Ag and Ab control tubes.

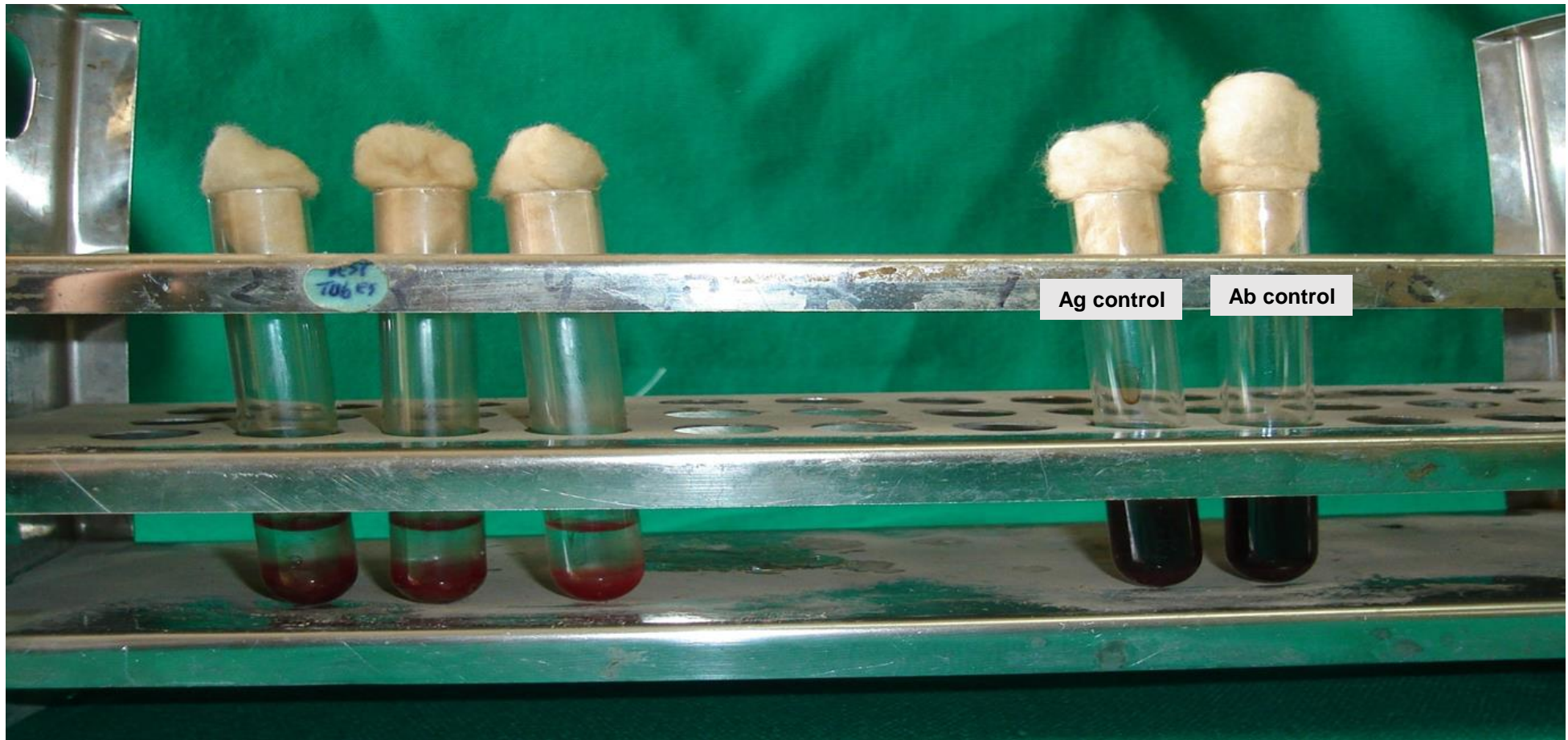
لو كلو أسود يبقى Negative (sad face icon) ←

لو الشمال لونه شفاف Positive (happy face icon) ←

غير كدة Anti-complementary reaction ←



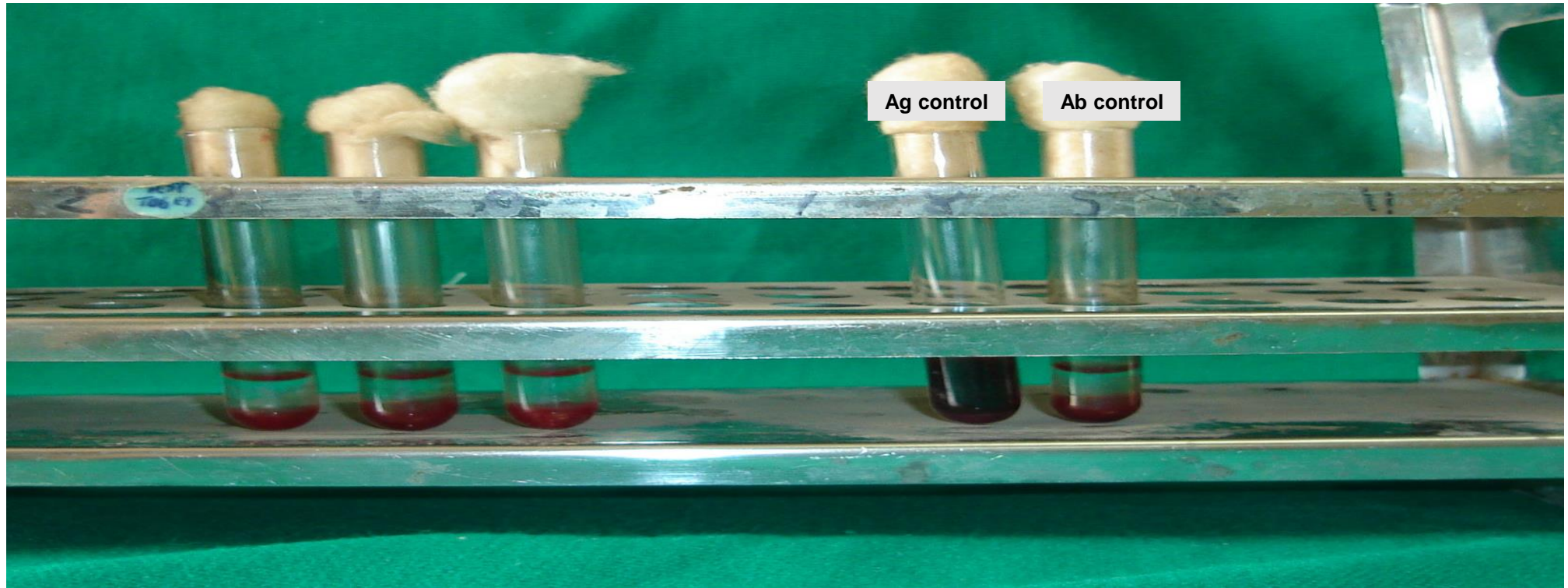
Wasserman test (strong positive)



Interpret the test: **Positive case:** No haemolysis in test tubes + Haemolysis in Ag and Ab control tubes.

لو الشمال لونه شفاف Positive

Wasserman test (anticomplementary reaction)



Interpret the test: **Anti-complementary reaction** :No haemolysis in all test tubes + no haemolysis in Ab control tube+ haemolysis in Ag control tube.

Causes of this reaction:

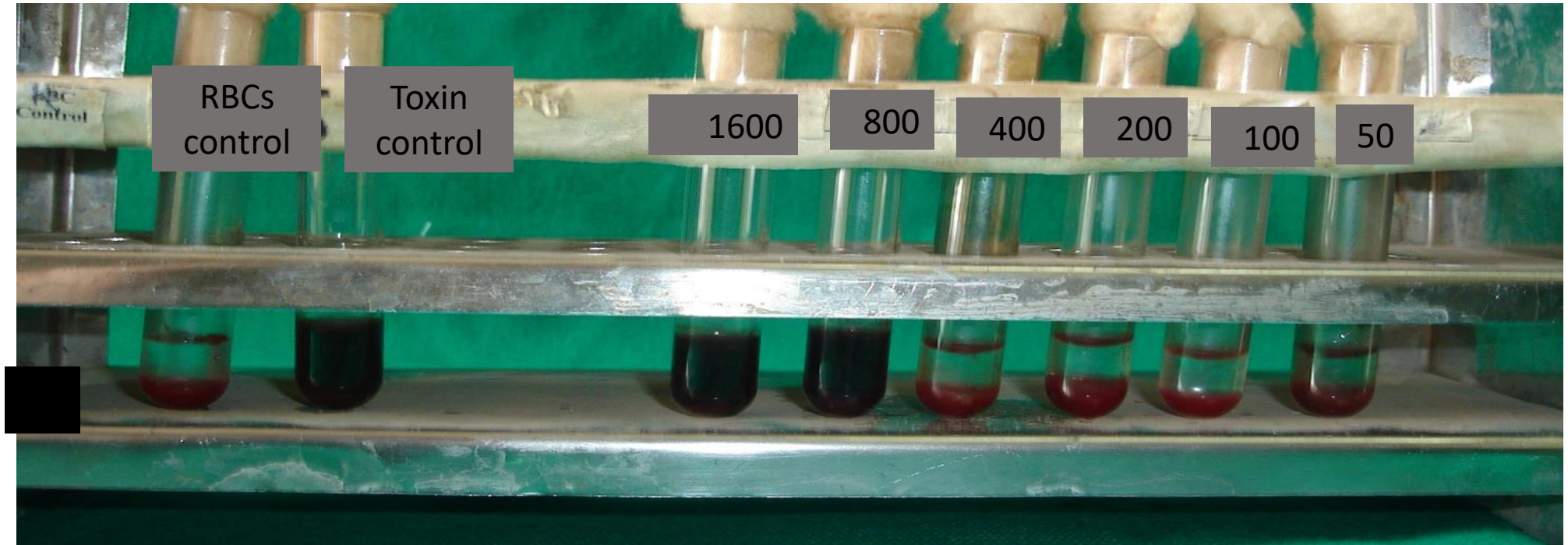
1-Presence of immune complexes in serum that bind to complement and prevent its haemolytic activity.

2- Heparin therapy

3- Old or contaminated serum which inactivate the complement.

غير كدة Anti-complementary reaction

ASO test



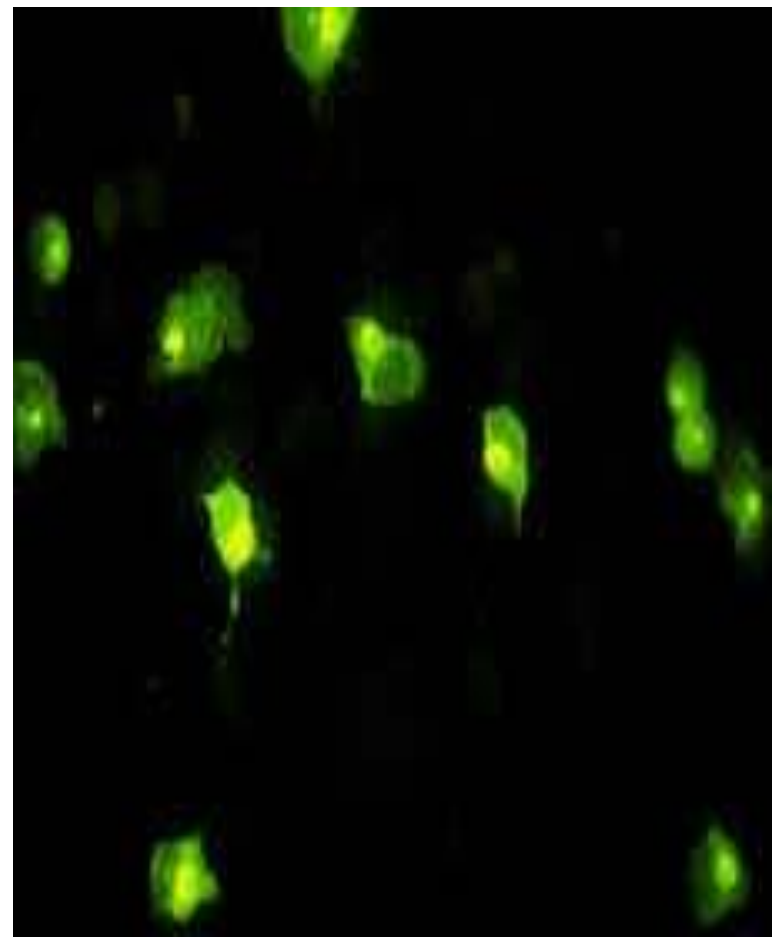
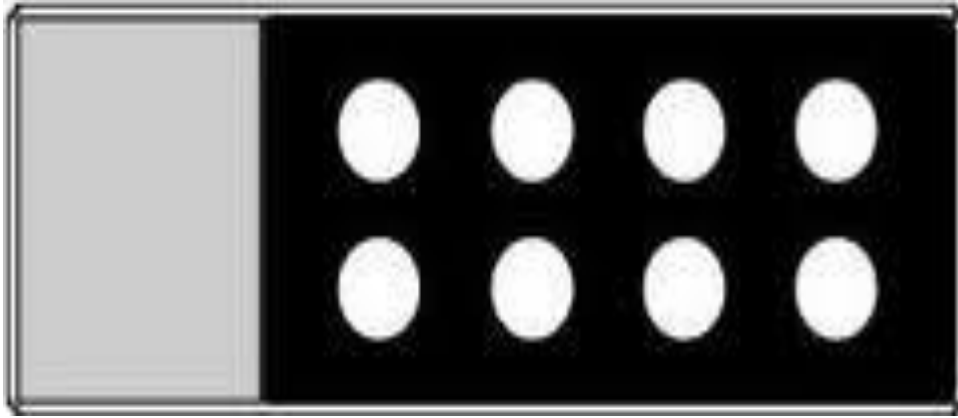
The test is : Anti-streptolysin O (ASO)test

Type of the test: Toxin antitoxin neutralization test.

Uses: Diagnosis of rheumatic fever (post-streptococcal infection)

Interpret the test: **positive case**: There is **NO** haemolysis in the first tubes and haemolysis in the rest of the test tubes.

Titer is: 400 Todd Units



The slide is : Teflon slide

Type of the test: Immuno-fluorescence assays

The used microscope is : Immuno-fluorescence microscope

Uses : Ag or Ab detection (in serological reactions).

التفل
منور في الشاي
الأسود



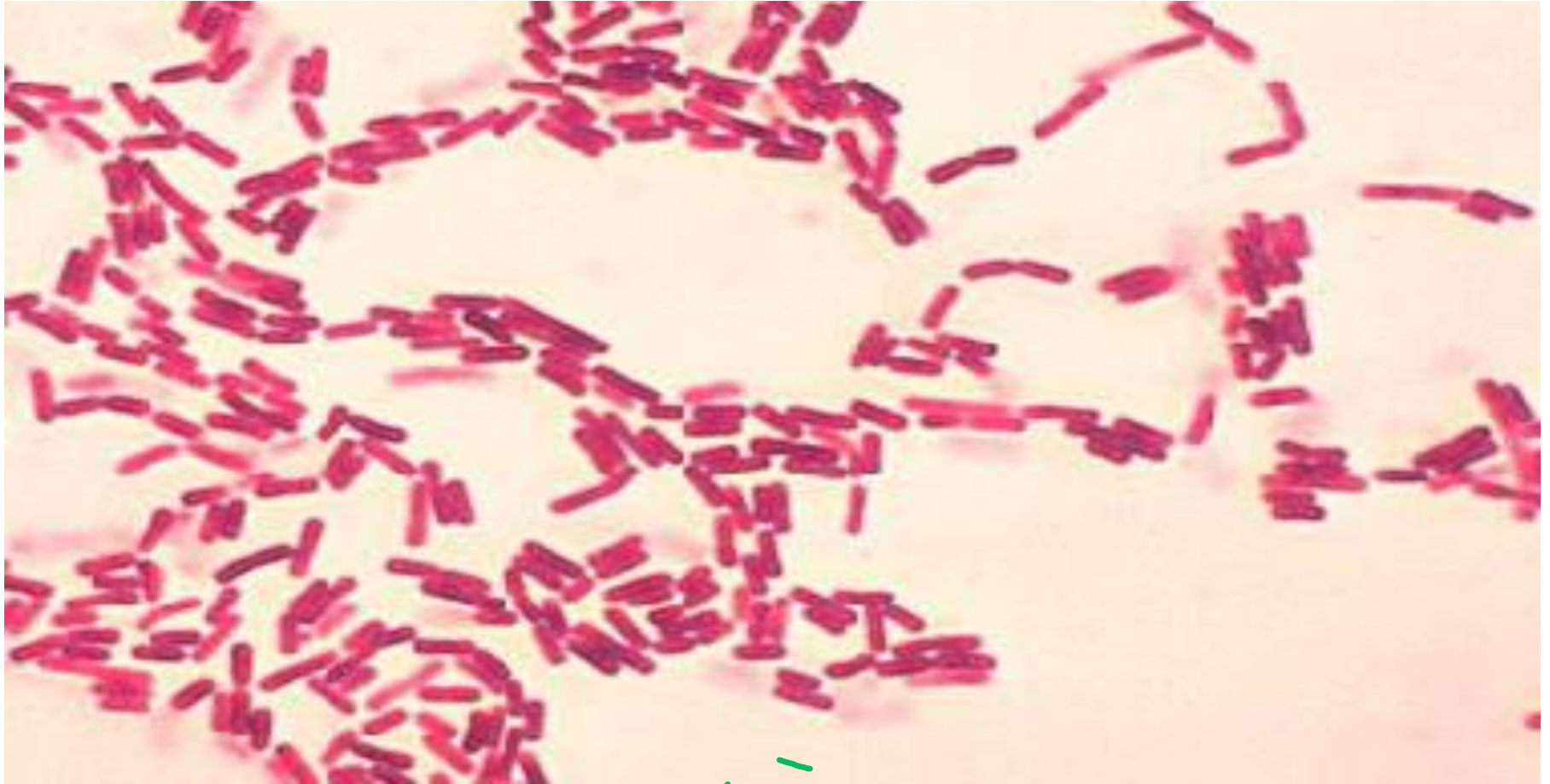
The picture is : Microtitration plate

Type of the test: Enzyme- linked immunosorbent assay (ELISA)

Sterilization by : Gamma radiation

Uses : Ag or Ab detection by ELISA

أنابيب صغيرة كثيرة



Gram -ve bacilli in culture
(Salmonella)

سالم رفيع زى العصاية - و سلبي في حياته
1 2 3



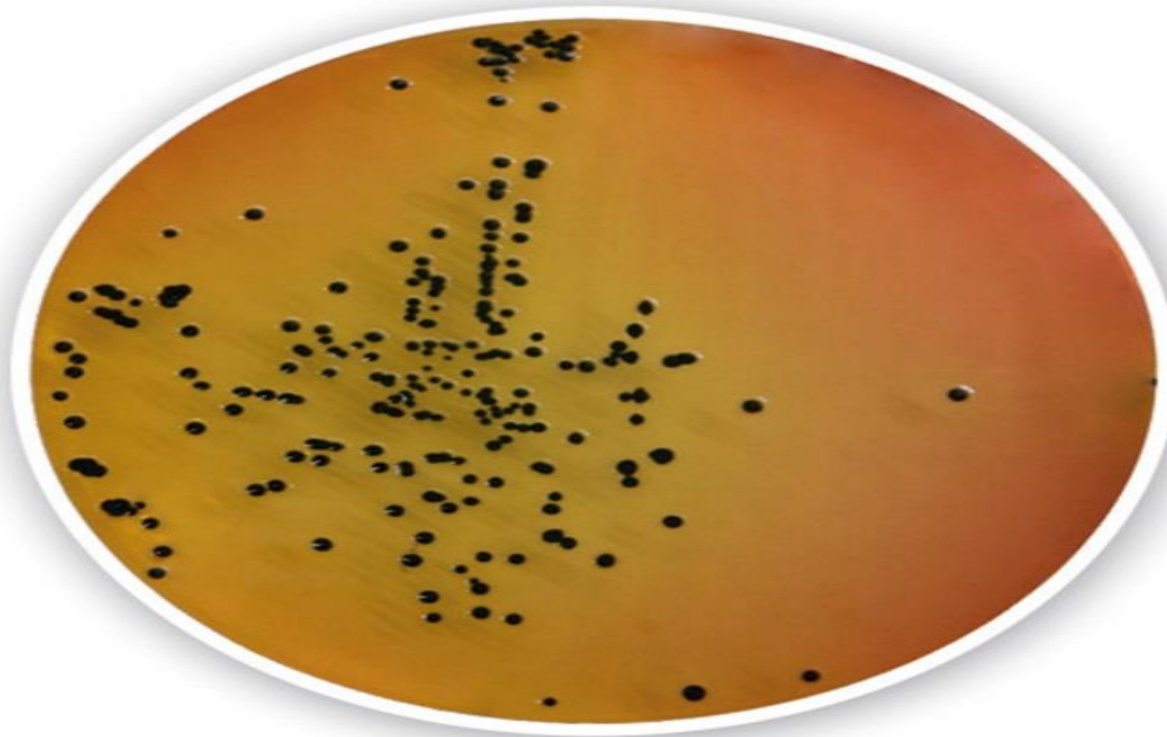
2 Biphasic blood culture bottle: used for detection of bacteraemia.



Donkey ! سالم الأصفر

MacConkey's medium.

Showing a **pale yellow** (non lactose fermenting) colonies
(Salmonella)



SS Agar (Salmonella Shigella Agar)

Type of the media: is a differential selective media used for the isolation of Salmonella and some Shigella species from pathological specimens.

Biochemical Reaction :

Salmonella typhi

- On TSI agar: **fermentation of glucose**, with acid only (red slant / yellow butt),
- **H₂S** positive (blackening)
- Indole test, urease test and citrate test are negative.

كله negative
ما عدا H₂S



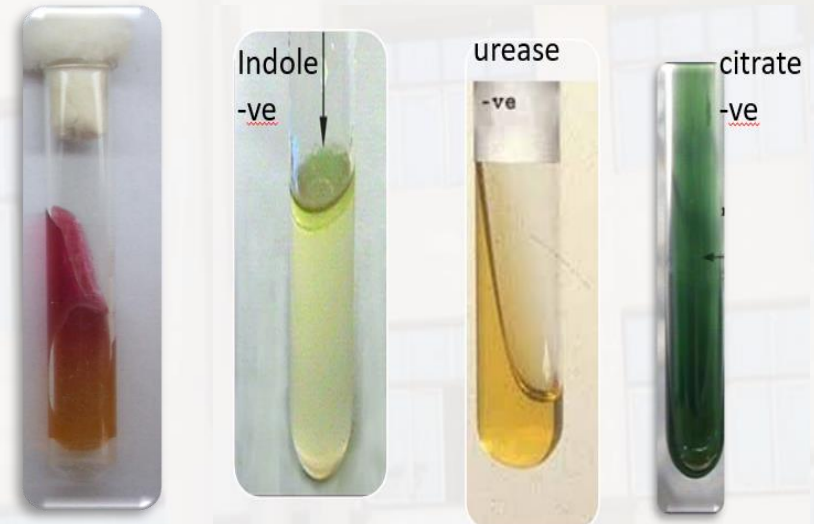
Biochemical Reaction

Salmonella Para A

- On TSI agar: fermentation of glucose, with acid and gas (red slant / yellow butt).
- Indole test negative.
- Urease test negative.
- Citrate test and H₂S are negative

اي. ١١.

كله negative



Biochemical Reaction

Salmonella Para B

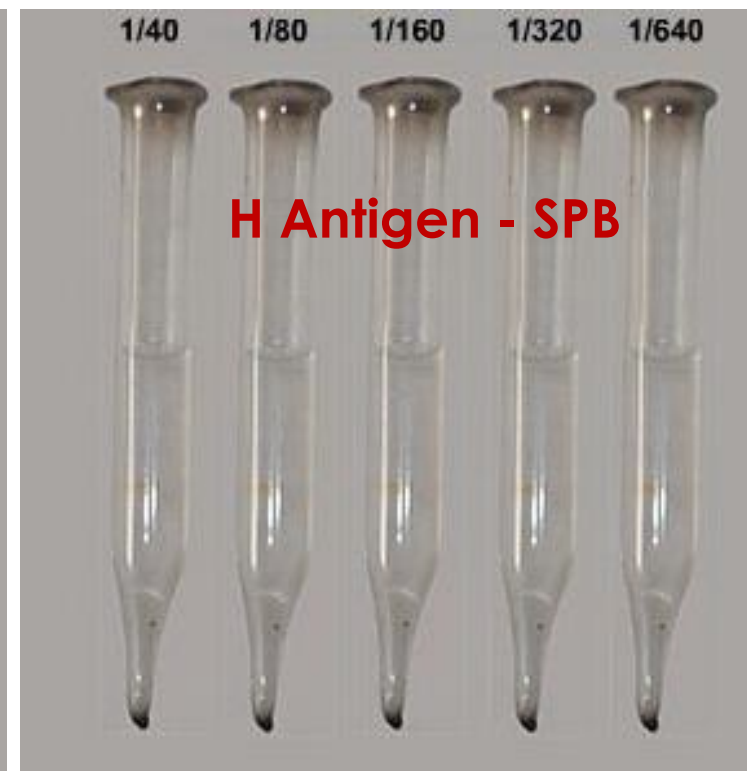
تاني حرف
Positive حاجتين

- On **TSI** agar: fermentation of glucose, with acid and gas (red slant / yellow butt).
- Indole test negative.
- Urease test negative.
- **Citrate test and H₂S** are positive



Widal test for Typhoid fever

**RECENT
(S. TYPHI)
INFECTION**



Widal test for Typhoid fever

REMOTE
(SPA)
INFECTION

O Antigen

1/40 1/80 1/160 1/320 1/640

H Antigen- ST

1/40 1/80 1/160 1/320 1/640

H Antigen - SPA

1/40 1/80 1/160 1/320 1/640

H Antigen - SPB

Widal test for Typhoid fever

O antigen

REMOTE
VACCINATION

1/40 1/80 1/160 1/320 1/640

H Typhi

1/40 1/80 1/160 1/320 1/640

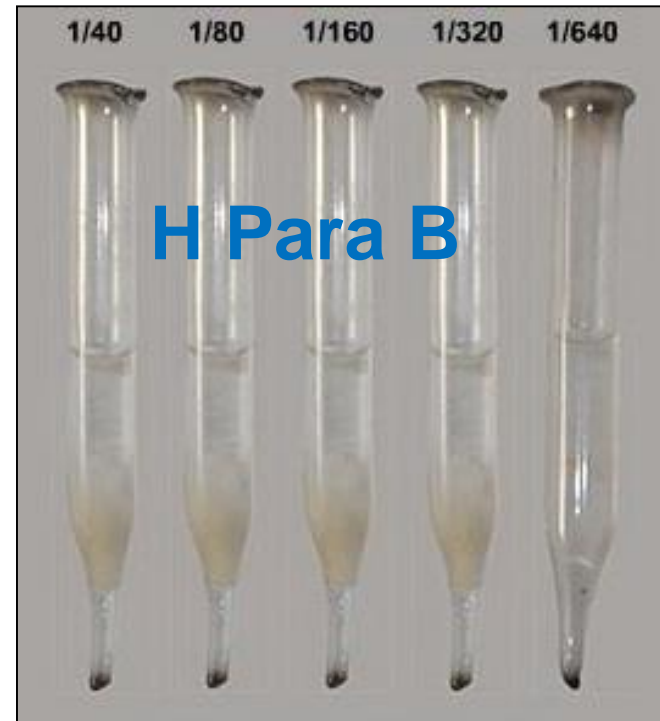
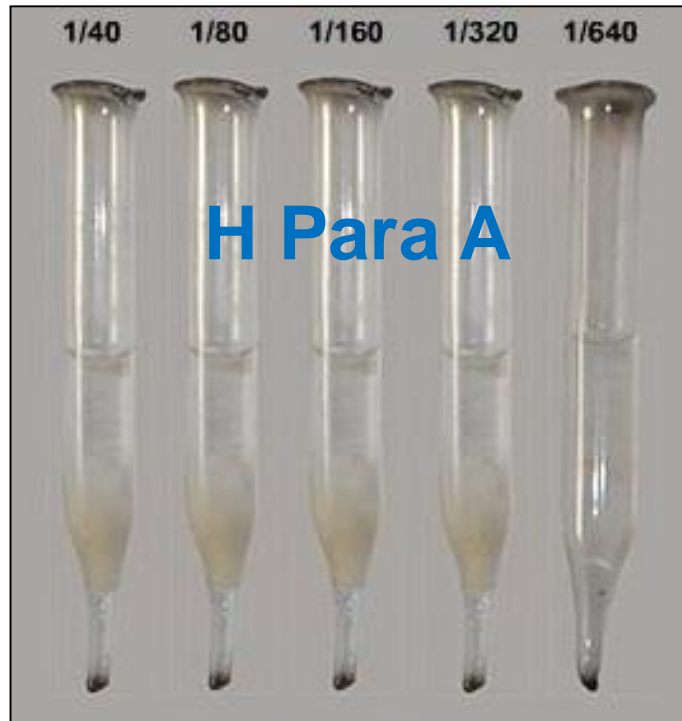
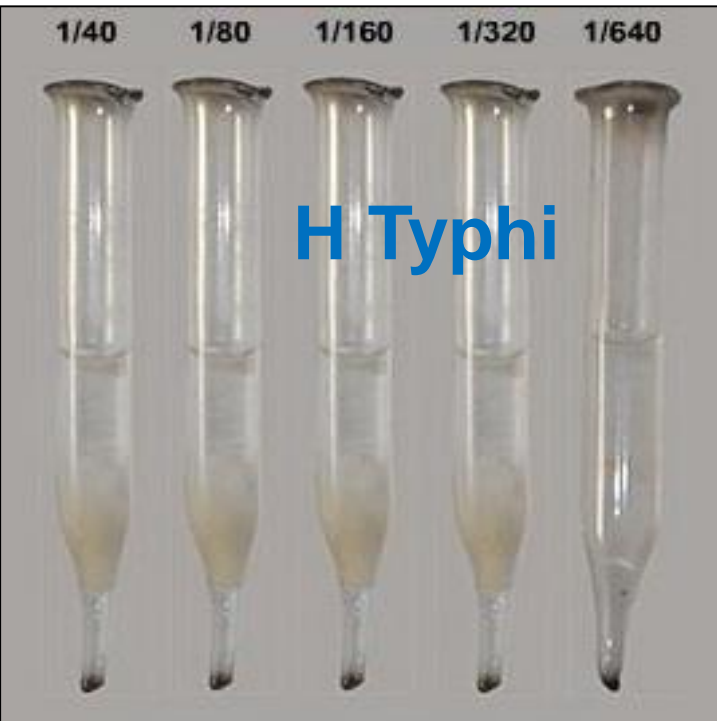
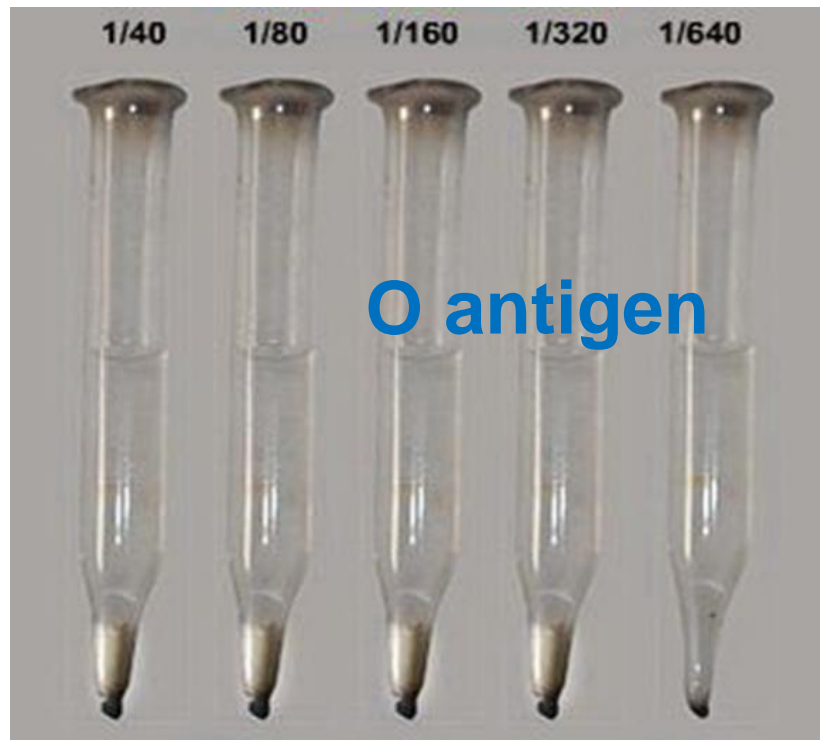
H Para A

1/40 1/80 1/160 1/320 1/640

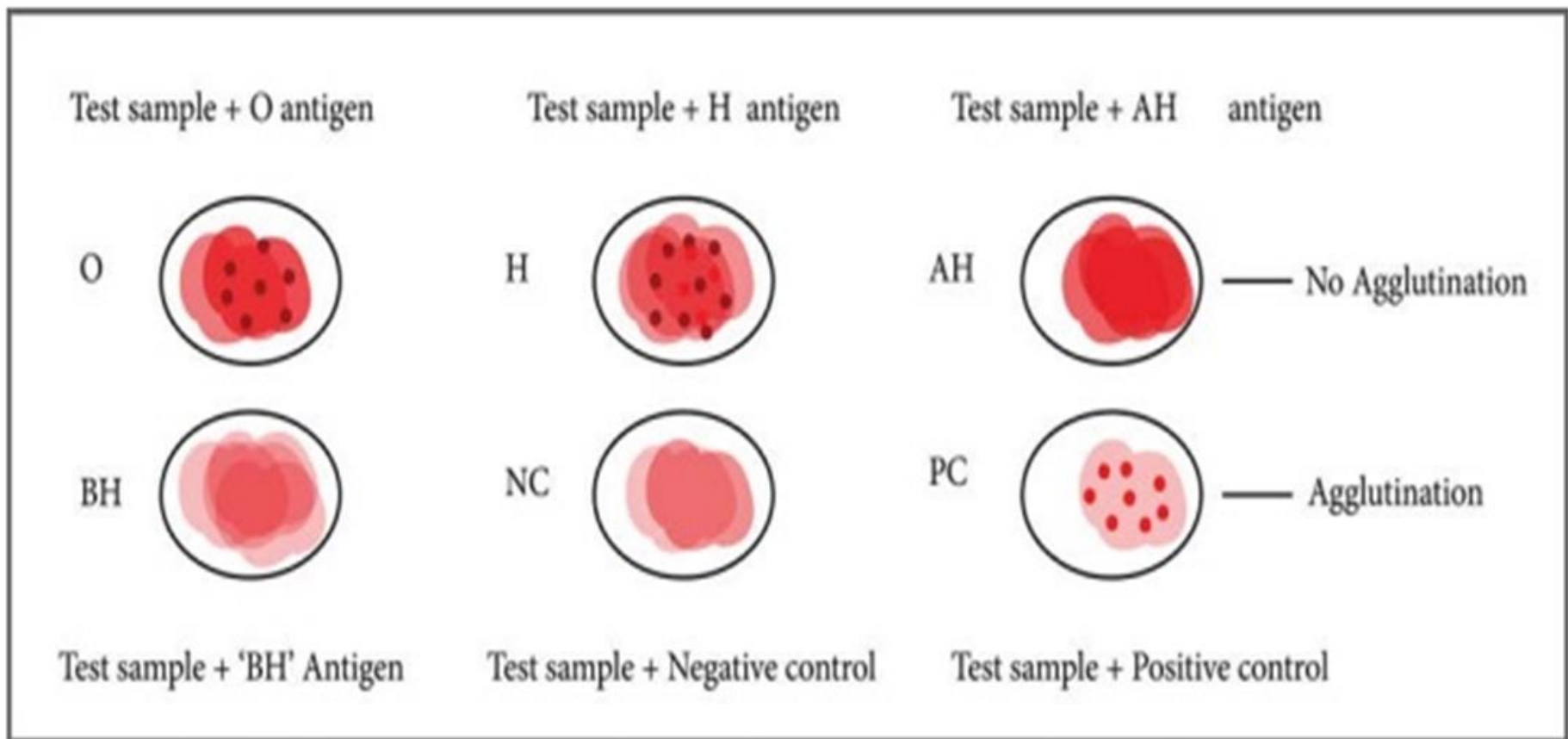
H Para B

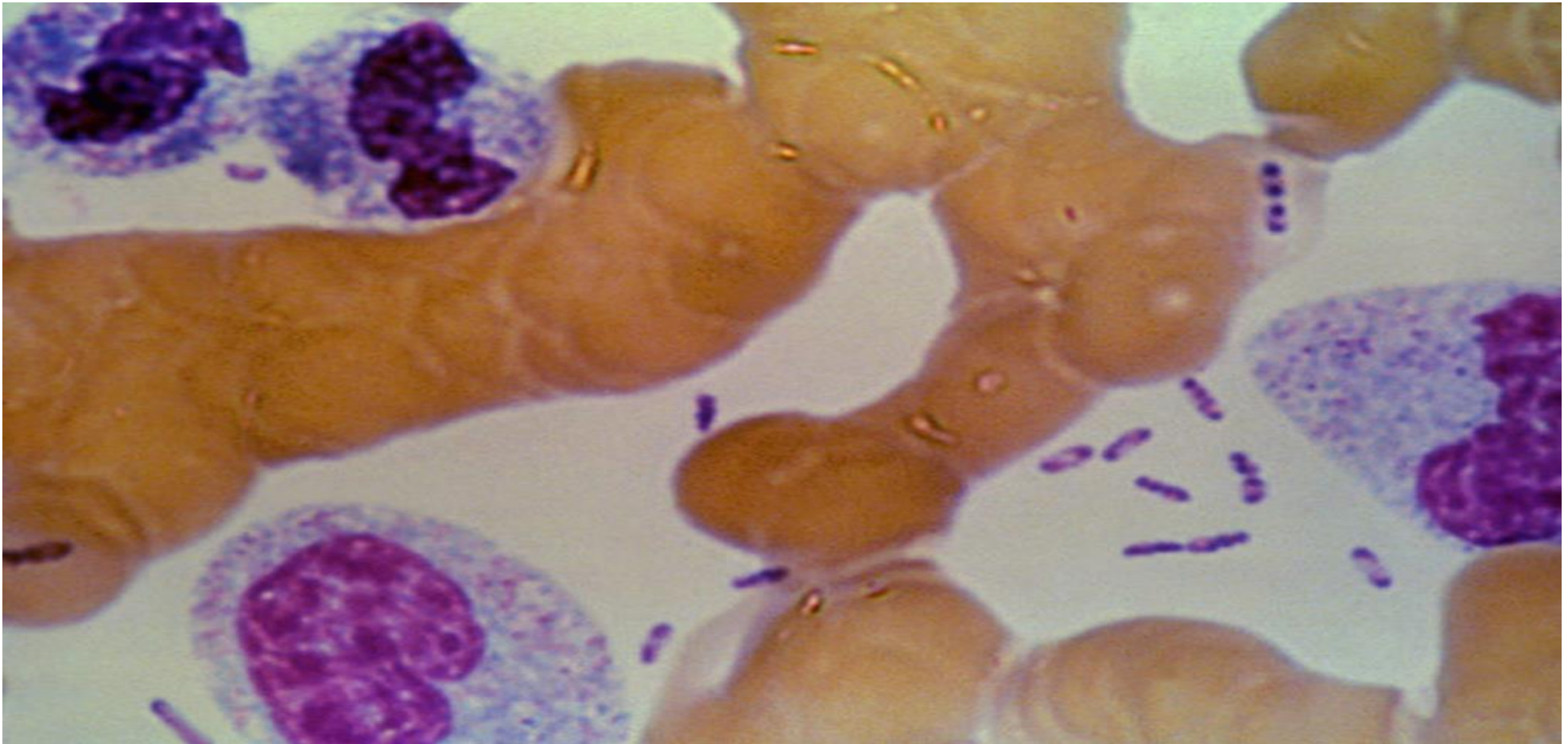
Widal test for Typhoid fever

RECENT VACCINATION



Slide Agglutination Test of Salmonella (indirect method)



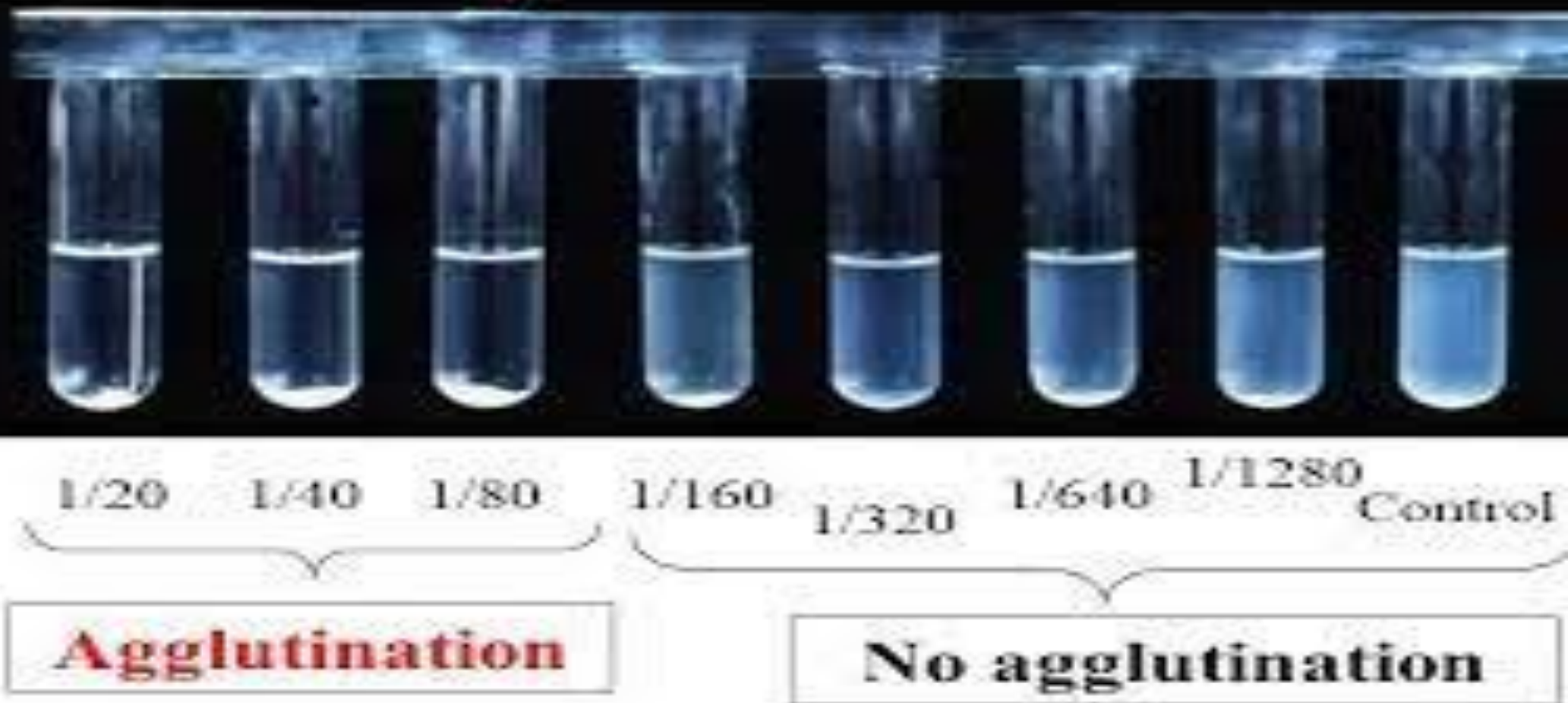


Yersinia pestis

Short Bacilli with Bipolar stain
Leishman stain- methylene blue

Causative agent of Plague
(It is gram negative coccobacilli)

In this case, the titre is 1/80

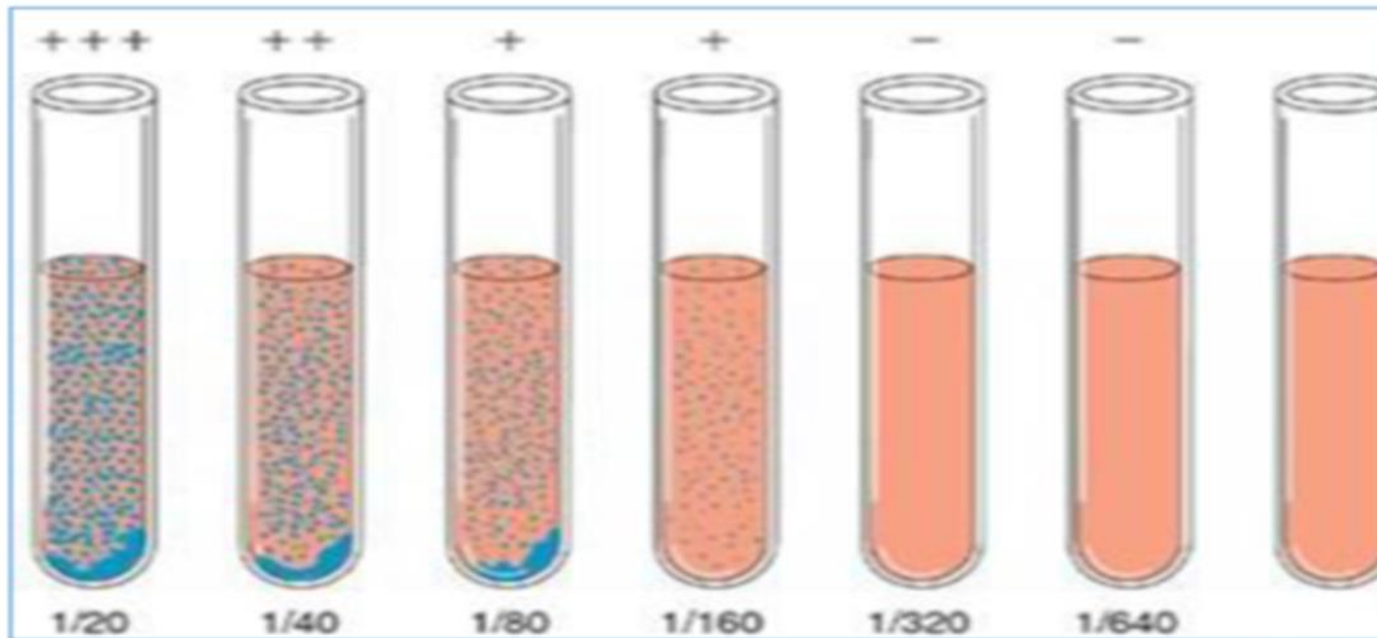


Standard tube agglutination test (STAT)

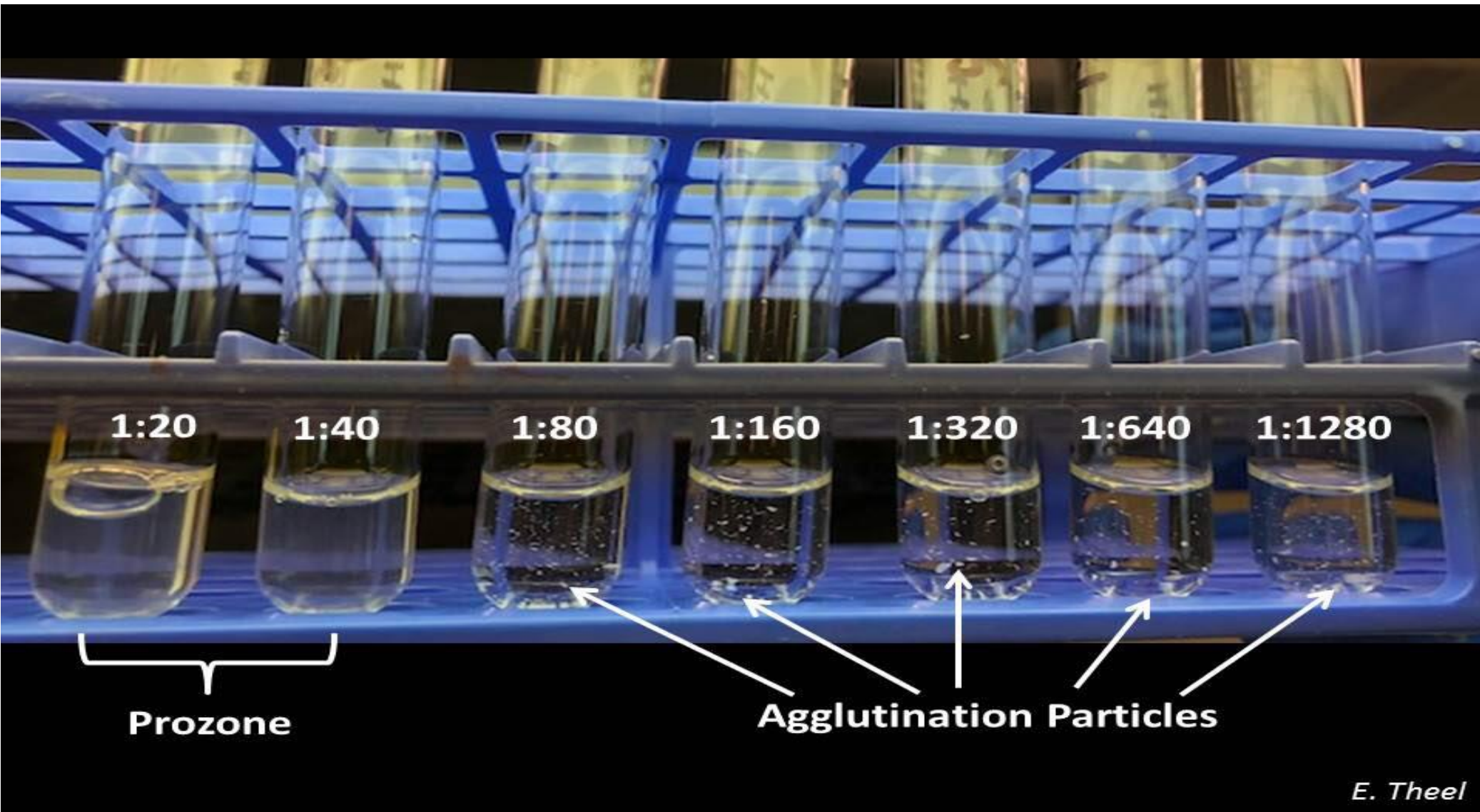
- The STAT detects antibodies to the **three Brucella spp.**
- The type is **Direct Agglutination test**
- A single titre of **>160 or a fourfold rise** in titre or greater is considered significant.

Standard tube agglutination test (STAT) of brucella

Wright(/Standard) tube agglutination(STA)



in diagnosis; 1/160 and above antibody positivity



Prozon phenomenon

Absence of agglutination in low dilutions of serum which contain high levels of antibody) are common.



Brucellin test

- It is intradermal allergic skin test similar to tuberculin.
- A killed suspension of brucella** is used for intradermal injections.



Thank You

