Parasitology lab.

Fecal Examination

Specimen Collection

- Collect the stool in a dry, clean, leak-proof container. Make sure no urine, water, soil or other material gets in the container.

- Fresh stool should be examined, processed, or preserved immediately. An exception is specimens kept under refrigeration when preservatives are not available; these specimens are suitable for antigen testing only.

- Preserve the specimen as soon as possible. If using a commercial collection kit, follow the kit's instructions. If kits are not available, the specimen should be divided and stored in two different preservatives, (10% formalin) using suitable containers. Add one volume of the stool specimen to three volumes of the preservative

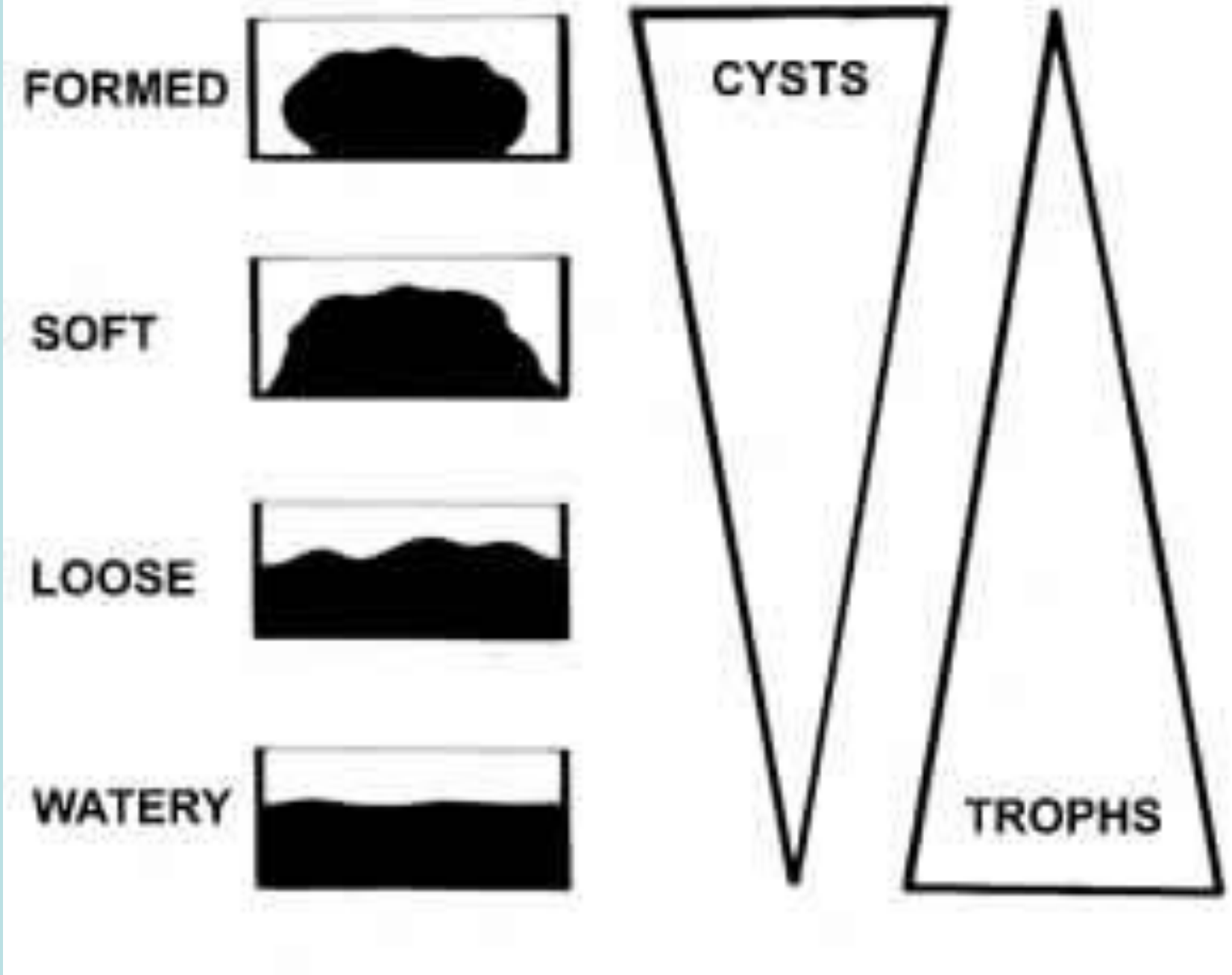
Insure that the specimen is mixed well with the preservative. Formed stool needs to be well broken up.

Insure that the specimen containers are sealed well. Reinforce with parafilm or other suitable material. Insert the container in a plastic bag.

Certain drugs and compounds will render the stool specimens unsatisfactory for examination.

The specimens should be collected before these substances are administered, or collection must be delayed until after the effects have passed. Such substances include: antacids, kaolin, mineral oil and other oily materials, non-absorbable antidiarrheal preparations, barium or bismuth (7-10 days needed for clearance of effects), antimicrobial agents (2-3 weeks), and gallbladder dyes (3 weeks).

- Specimen collection may need to be repeated if the first examination is negative. If possible, three specimens passed at intervals of 2-3days should be examined.


FORMED
SOFT
LOOSE
WATERY
CYSTS
TROPHS

Staining

- 1-Temporary : Saline, iodine, eosin
- 2- Permanent: Iron hematoxylin and Trichrome stain.

- Fecal Examination

the first step examination depend on the external appearance of the stool such as :

the color , blood , constency , mucose , pus , proglottide , adult of parasite .

1 - Microscopic:

Microscopic

(a) Saline wet amount examination:

put a drop of normal saline on a glass slide and then put small amount of stool by wooden stick then mixed well and then covered with a cover slide.

Then examined under a light microscope, it is important to examine specimen under 10X objective lens at first to observe large molecules, cells, ova and helminthes,then to the 40X objective to complete the test.

It is preferable to keep the condenser down and the intensity of the light low for proper visualization of the ova and cysts.

(b)Iodine examination:

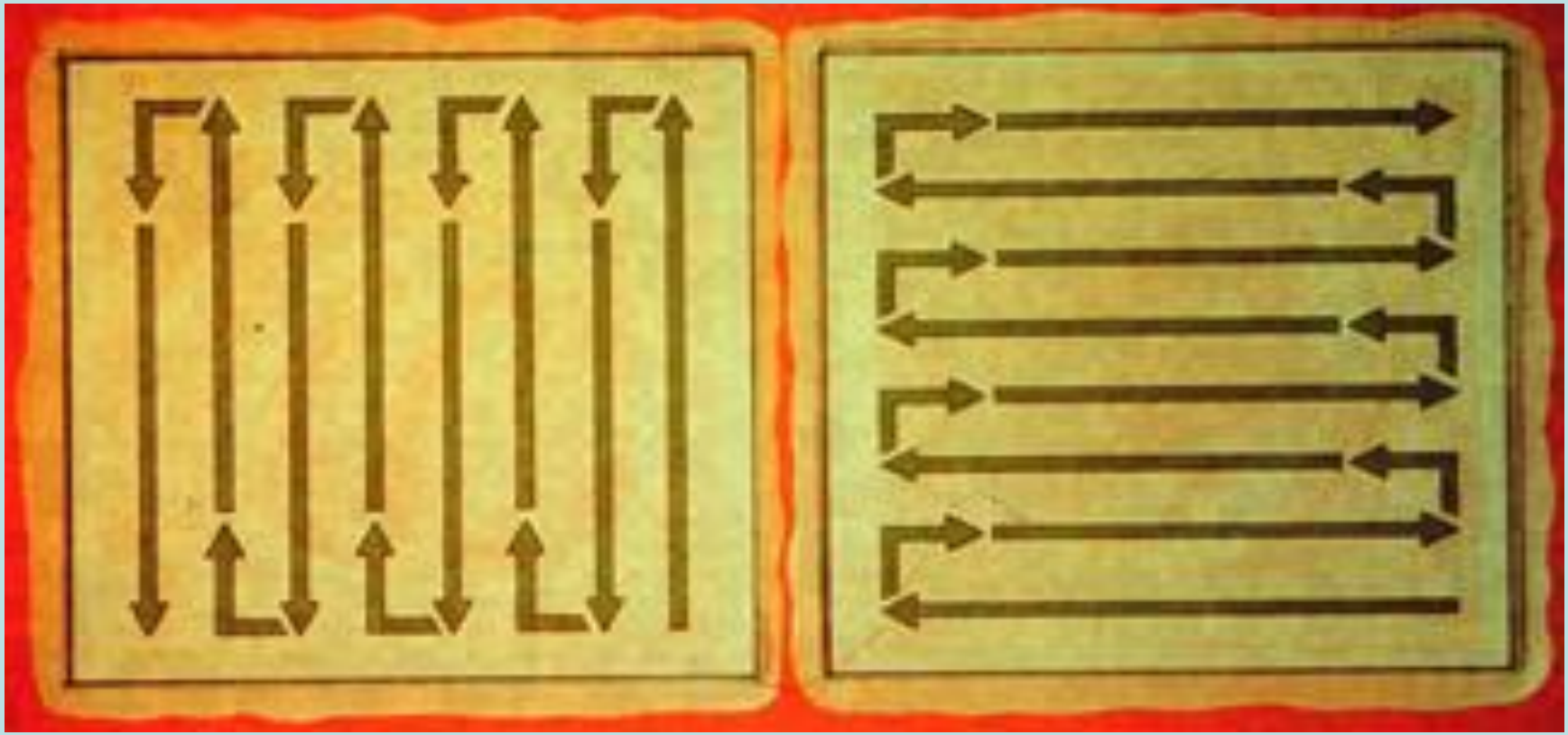
Iodine preparation leads to better visualization of morphological details of ova and cysts as it stains the glycogen in them.

put a drop of iodine on a glass slide and then put small amount of stool by wooden stick then mixed well and then covered with a cover slide.

Then examined under a light microscope used the same step in saline examination .

Microscopic Examination

- Used the zigzag method when we examine the slide under microscope .



2-Stool Concentration Methods

- Techniques used to detect parasites in stool samples
- Improve diagnostic sensitivity
- Commonly used in parasitology laboratories

Types of Concentration Methods

- 1. Sedimentation Techniques
- 2. Flotation Techniques
- 3. Baermann Technique – Steps
- Method selection depends on parasite type

Comparison of Techniques

- Sedimentation: best for heavy eggs
- Flotation: best for cysts and light eggs
- Baermann: best for larvae detection

1-Sedimentation Techniques

- Parasites settle at the bottom
- Better for heavier eggs and larvae
- Examples: Formal-ether sedimentation

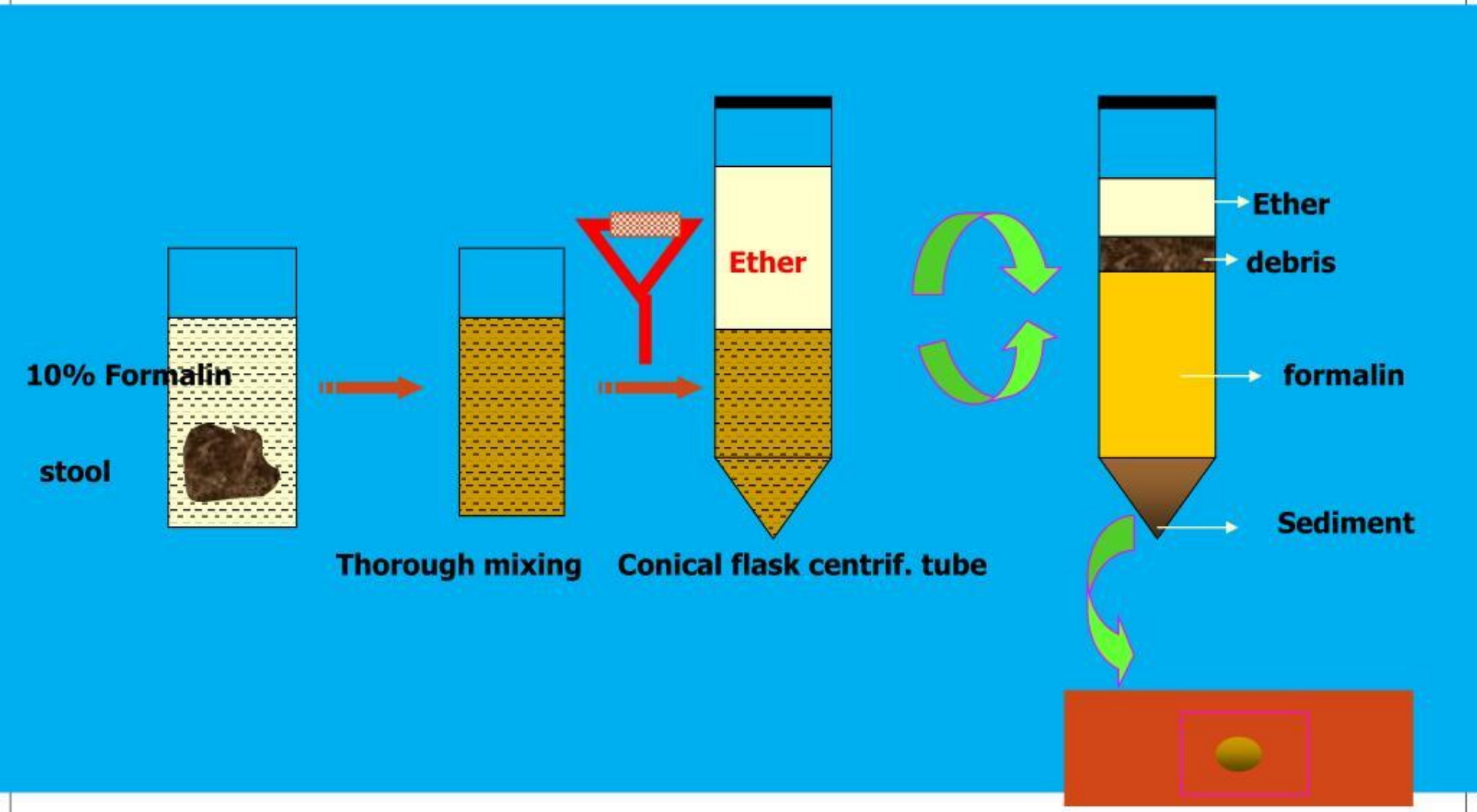
Advantages of Sedimentation

- Good recovery of heavy parasite eggs
- Removes debris effectively
- Suitable for routine lab diagnosis

Formalin-Ether Sedimentation – Steps

- 1. Mix stool sample with formalin
- 2. Strain the mixture
- 3. Add ether
- 4. Centrifuge the sample
- 5. Discard supernatant
- 6. Examine sediment under microscope

Formol Ether Sedimentation



- **Ether adsorbs fecal debris & floats.**
- **Formalin fixes & preserves the specimen.**

2-Flotation Techniques

- Parasites float in solutions with higher specific gravity
- Common solutions: saturated salt, zinc sulfate
- Useful for detecting protozoan cysts and helminth eggs

Zinc Sulfate Flotation

- High efficiency for protozoan cyst recovery
- Less distortion of parasites
- Requires centrifugation

Zinc Sulfate Flotation – Steps

- 1. Mix stool with zinc sulfate solution
- 2. Strain the suspension
- 3. Centrifuge
- 4. Add more solution to form meniscus
- 5. Place coverslip
- 6. Examine microscopically

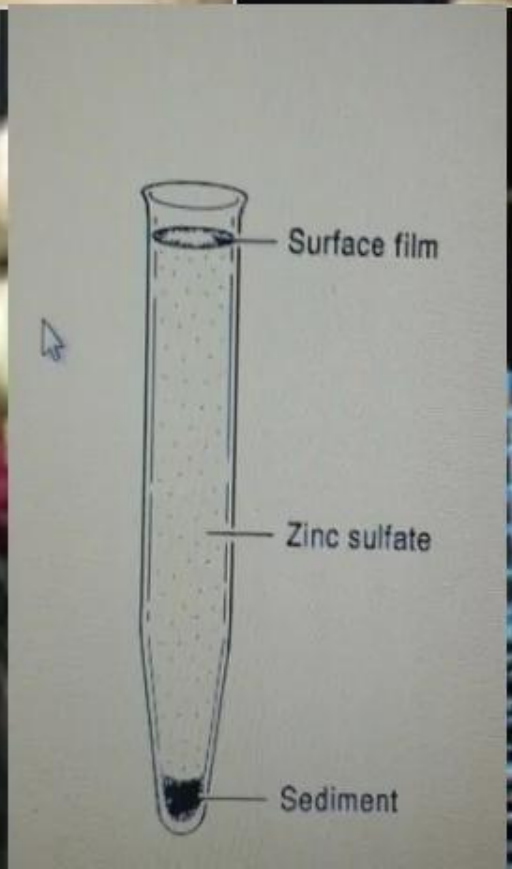










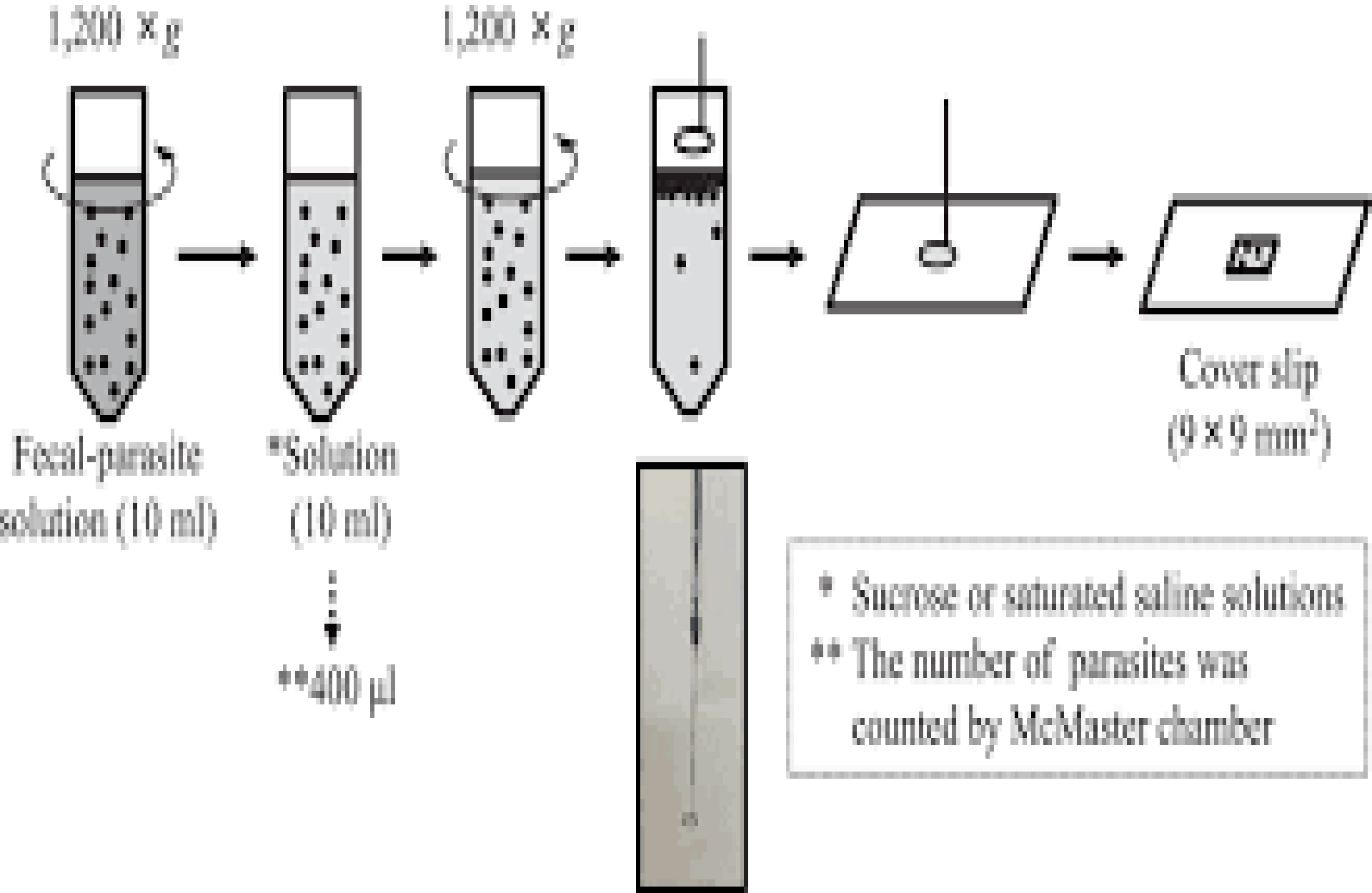

Surface film
Zinc sulfate
Sediment



Saturated Salt Flotation – Steps

- 1. Prepare saturated salt solution
- 2. Mix stool with solution
- 3. Strain mixture
- 4. Fill tube to top
- 5. Place coverslip
- 6. Examine for parasites

Loop method


1,200 × g
1,200 × g
Fecal-parasite solution (10 ml)
*Solution (10 ml)
**400 µl
Cover slip (9 × 9 mm²)
* Sucrose or saturated saline solutions
** The number of parasites was counted by McMaster chamber

3- Baermann Technique – Steps

- 1. Place stool on gauze
- 2. Immerse in warm water
- 3. Allow larvae to migrate
- 4. Collect fluid from bottom
- 5. Examine microscopically

Baermann Funnel Technique



Funnel



IJs collection



IJs collection

IMPORTANT FEATURES USED TO IDENTIFY HELMINTH EGGS

NEMATODES













CESTODES









TREMATODES





TREMATODES (continued)













