- **Protozoa:** unicellular organisms, e.g. Plasmodium (malaria)

- **Metazoa:** multicellular organisms, e.g. helminths (worms) and arthropods (ticks, lice)

Diagnosis of Parasitic Infections

1. Clinical
2. Laboratory

Purpose of laboratory diagnosis :

— Confirmation of clinical suspicion

— Identification of unsuspected infection

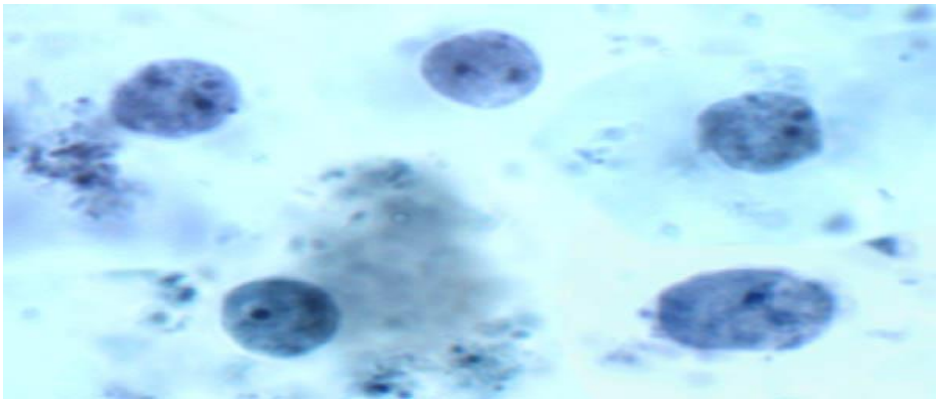
Specimens:

- Stool
- Blood
- Serum and plasma
- Others (anal swab, duodenal aspirate, sputum, urine, urogenital specimen)
- Tissues.

Stool examination:

Sample collection:

— Sample is collected in clean, dry container
— Handled carefully
— Sometimes use preservative (10% formalin)
— Samples in some cases fresh(amoeba)
— Liquid and soft stool examined within 15 min
— Not mixed with urine or disinfectant (as they will kill trophozoites)



Morphology of *Dientamoeba fragilis* from a stool sample. Trophozoites exhibit an ameba-like morphology and are often bi-nucleated.

— Specimens obtained by enema or laxatives are often positive for worm eggs or adult worm.

Examination of the stool sample:

Gross examination:

— Mucoid blood stained (acute amoebic dysentry), Parasites can be detected (nematodes, cestodes)

Microscopic examination:

- — Saline mount
- — Iodine Mount
- — Thick smears – not commonly used
- — Permanent stained smears
  - — Iron hematoxylene
  - — Whearley's trichrome stain
- — Concentration methods
  - — Floatation techniques
  - — Sedimentation techniques

Antigen detection

Molecular diagnosis

Microscopic examination

Direct wet mount:

— Thin emulsion of small amount of faeces

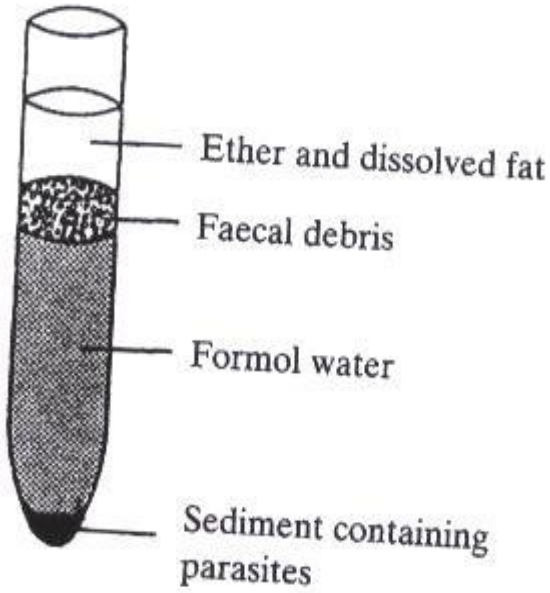
— Few drops of saline

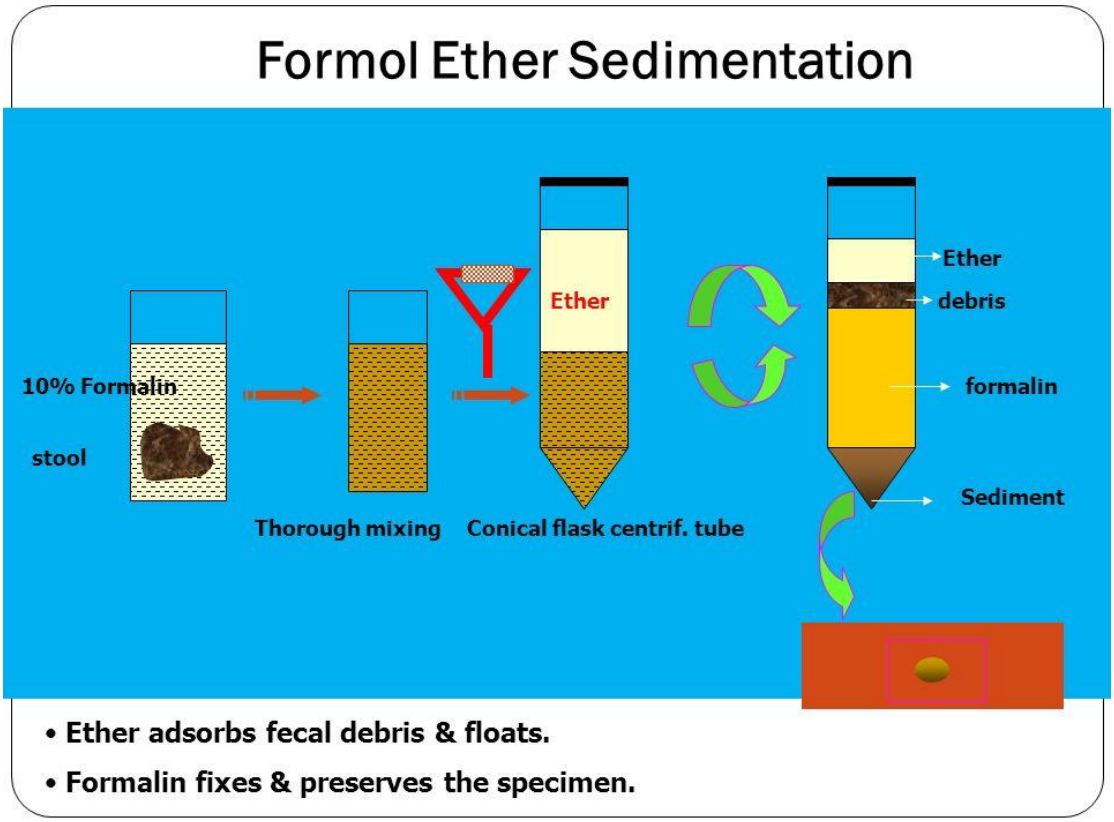
— Sometimes add lugol's iodine (nuclear details, glycogen vacuole in cyst)

— Protozoa (trophozoite), cyst, eggs and larva of helminths, crystals

Concentration methods:

- Scanty parasites in the sample
- **Floatation** (eggs and cyst float , solution of high specific gravity)
  1. saturated sodium chloride (ascaris, hookworms)
  2. Zinc sulphate centrifugation floatation (cyst, nematodes).
- **Sedimentation** (solution of low specific gravity): formol ether




Formol Ether Sedimentation
10% Formalin
stool
Thorough mixing
Ether
Conical flask centrif. tube
Ether
debris
formalin
Sediment
• Ether adsorbs fecal debris & floats.
• Formalin fixes & preserves the specimen.