Laboratory No. 3
General Stool Examination (GSE)

Collection of samples

If a faecal sample is not properly collected and taken care of before examination, they will be of little or no value for accurate diagnosis. This is especially true if protozoa are present. Amoebic trophozoites begin to degenerate 1-2 hours after passage, as do flagellate trophozoites. Cysts will deteriorate if the faecal specimens are left standing for many hours or overnight, especially at high temperatures.

Helminth eggs and larvae are less affected by the age of the specimen than are protozoa. Nevertheless, changes may occur that could affect their identification. eg, hookworm larvae may become embryonated and larvae may hatch from the eggs risking confusion with Strongyloides larvae. Larvae themselves may disintegrate thus making their identification difficult.

To ensure that good specimens are provided for examination, it is important to note the following points.

1. A clean dry container must be used for the collection of faecal samples. Urine and water will destroy trophozoites, if present, and the presence of dirt also causes identification problems.

2. Ideally the specimen should be brought to the lab as soon as it is passed, to avoid deterioration of protozoa and alterations of the morphology of protozoa and helminths.

3. The specimen container should be clearly labelled with the patients name, date, and time of passage of the specimen.

4. An amount of stool adequate for parasite examination should be collected and a repeat sample requested if too little is supplied.

5. Diarrhoeal specimens, or those containing blood and mucus, should be examined promptly on arrival in the laboratory. The specimens may contain motile amoebic or flagellate trophozoites and may round up and thus be missed if examination is delayed. Where amoebic dysentery is suggested, the laboratory should be informed that a ‘hot stool’ is being supplied so that it can be examined within twenty minutes of being passed.

Visual observation of the faecal sample

It is important to observe the macroscopic appearance of the stool as this can give a clue to the type of organisms present. Therefore the consistency; formed, unformed or liquid; the colour and the presence or absence of an exudate are reported. The presence of adult worms can also be seen in a freshly passed stool eg adult stages of Ascaris lumbricoides and Enterobius vermicularis. Proglottids of Taenia species can also be seen.
The normal stool is brown due to bile pigments, and the color of stool is affected by the type of food.

**Types of Stool**

<table>
<thead>
<tr>
<th>Type of stool</th>
<th>Likely reason</th>
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<tbody>
<tr>
<td>Watery</td>
<td>Diarrhea</td>
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<tr>
<td>Clay colored</td>
<td>Obstructive jaundice or presence of barium sulfate</td>
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<tr>
<td>Reddish colored</td>
<td>Blood from lower gastrointestinal tract, beef consumption</td>
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<tr>
<td>Black</td>
<td>Bleeding from upper gastrointestinal tract, Iron, charcoal.</td>
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<tr>
<td>Green</td>
<td>Ingestion of Spinach, antibiotics.</td>
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**Procedure for the Microscopic Examination of Faecal Samples for Parasites**

1. place a drop of saline a clean slide.
2. place a small piece of stool on the slide and mix with saline, cover with a cover slip. If the specimen contain mucus, the examination prefer to be done without saline. The mucus is put on the slide and covered with cover slip.
3. examine under 10X and 40X objectives.
4. report the presence of:
   - Large numbers of pus cells
   - RBCs
   - Amoebas, flagellates
   - Eggs, larvae & cysts.

Using of Saline: Normal saline (0.85%) is used for routine examination of stool samples, as it is isotonic.

Using of Iodine: Iodine is used to examine the nuclei of cysts.

Using of Eosin 1%: this provide a pink background and that will help to clear the unstained objects.
Entamoeba histolitica

Giardia lamblia
Enterobius vermicularis (Pin worm)

Ascaris lumbricoides

Hook worm
**Taenia saginata**

- Egg
- Gravid proglottid

**Fasciola hepatica**

- Egg
- Adult worm

**Schistosoma japonicum**

- Female
- Male

**Schistosoma mansoni**

- Female
- Male

- Egg