Gross Exam and Direct Smear

Purpose:
The gross exam and direct smear are the fastest ways to examine a fecal sample for parasites.

Objectives:
The students will be able to perform two of the most basic diagnostic techniques and be able to identify parasite eggs using a microscope.

Materials: NOTE: always wear gloves when handling feces
- Fecal samples
- Popsicle sticks
- Gloves
- 2 microscope slides and cover slips for each student
- Distilled water
- Lugol's iodine diluted with distilled water 1:5

Procedure:
1. Obtain a fecal sample and observe and record the characteristics in the space provided

2. Using your fecal sample, follow the directions below to perform a direct smear.

<table>
<thead>
<tr>
<th>Species</th>
<th>Consistency</th>
<th>Color</th>
<th>Blood</th>
<th>Mucus</th>
<th>Age</th>
<th>Parasites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Watery</td>
<td></td>
<td>Y/N</td>
<td>Y/N</td>
<td>Fresh</td>
<td>Y/N</td>
</tr>
<tr>
<td>Hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Old</td>
<td>Type:</td>
</tr>
</tbody>
</table>
Direct Smear Procedure:

a. Place a drop of distilled water in the middle of the slide.
b. Next to the drop of water place a piece of feces that is approximately the same size.
c. Use the popsicle stick to mix the feces and water together until they are thoroughly combined.
d. Make a thin smear across the slide using the popsicle stick. The smear should be thin enough to read the print on a piece of paper placed under the slide. Check this by placing the slide on these directions.
e. Remove any large particles from the slide and place a cover slip over the smear. The cover slip should sit evenly over the smear.
f. Begin scanning the slide using the microscope. Be sure to follow the correct scanning pattern so that each area of the slide (field) is thoroughly examined. If a parasite is seen, center that area and switch to high power to examine.

3. In the circles below, draw and label any parasite eggs you find.

4. Repeat steps A through F using the diluted Lugol’s iodine instead of water. Scan the slide looking for parasite eggs and protozoa.

5. In the circles below, draw and label any parasite eggs or protozoa you find.
Analysis/ conclusions:

1. Why is it important to do a gross examination of the fecal sample before testing it for parasites?
   a. The answer: a gross exam will pick up abnormalities in color and consistency. It will also allow you to find adult parasites and blood.

2. Why was Lugol’s iodine instead of distilled water used for the second microscope slide?
   a. The answer: Lugol’s iodine stains protozoa so that they are easier to find.

3. What are the advantages and disadvantages of using the direct smear method?
   a. The answer: the advantage is that it is quick and easy as well as inexpensive. The disadvantages is that there is a lot of debris on the slide, which makes it harder to find parasite eggs.

4. Why it is important to wear gloves when handling fecal samples?
   a. The answer: some parasites are transferable to humans, so the gloves prevent you from coming into direct contact with the feces.