Name: _____

CASE

Activity 8.3.2 Eggs Afloat

Purpose

Determining the presence of parasites is necessary to providing the correct treatment to an animal. Antibiotics and antihelminthic drugs are often specific to one type or class of internal parasite. If a producer treats an animal for the wrong parasite, the problem will persist. A veterinarian should do identification of parasites for treatment purposes, but it is possible to test for the presence of parasitic eggs with basic laboratory equipment. Fecal smears and fecal flotations are used to test fecal matter for parasitic eggs.

The fecal smear is a common veterinary technique that is one of the most used tools for the detection of internal parasites. By smearing a portion of fresh fecal matter onto a microscope slide and examining it, you can often detect minute amounts of blood, parasitic eggs, and other factors that can be linked to infection. A fecal smear can be done as an inexpensive screening exam at every checkup.

Another method for detection of parasites in feces is fecal flotation, where the fecal matter is placed in a solution with a specific gravity that is greater than the eggs of the parasite, causing them to float to the surface. Fresh feces is preferable, because many microbes and parasites will degrade rapidly when removed from the body. Veterinarians often recommend that fecal matter be less than 24 hours old to be used for a fecal smear. Will you be able to determine if parasites are present in fecal matter?

Materials

Per class:

- WARD's Internal Animal Parasites poster
- Assorted fecal samples
- Electronic balance

Per student:

- Disposable gloves
- Lab apron
- Safety glasses
- Pencil
- *Agriscience Notebook*

Per team of three students:

- WARD's Agricultural Parasites slide set
- Microscope
- Dilute iodine solution
- Distilled water
- Flotation solution
- Cheesecloth
- 3 microscope slides and cover slips
- 2 toothpicks
- Test tube
- Paper funnel
- Medicine cup
- Forceps
- Pipette

Procedure

Work in a team of three to prepare slides to evaluate for the presence of parasites. Follow the procedures outlined for preparing a fecal smear and a simple flotation. Wear proper personal protective equipment at all times. This includes disposable gloves and a lab apron.

Part One – Preparing A Fecal Smear

1. Examine the provided slide set and internal parasites poster to get an idea of the appearance of some of the most common internal parasites and their eggs.
2. Obtain a fresh fecal sample.
3. Perform a gross examination (with the naked eye) of the fecal sample. Examine the feces and record your observations in Table 1 of Activity 8.3.2 Student Worksheet.
4. Obtain a clean microscope slide and cover slip.
5. Place a drop of water on the surface of the slide. Use a toothpick to add a small amount of the fecal sample to the drop of water and mix well.
6. Spread the mixed drop across the slide with the toothpick until it is spread thinly enough that you can read these instructions through it.
7. Using forceps remove any large particles or debris from the sample and discard them.
8. Gently apply a clean cover slip over the smear. The cover slip should sit flat and have no air bubbles.
9. Inspect the fecal smear at low power with a microscope. Scan the slide in the pattern shown in Figure 1. Note any features that stand out.
    - Many times tiny air bubbles are mistaken for eggs. Air bubbles have a clear center and a much thicker black ring surrounding them.
10. If any of the objects appear to be eggs, increase the magnification and observe at high power.
11. Sketch any parasite eggs you find in Table 2 of *Activity 8.3.2 Student Worksheet*.
12. Repeat steps 4-11, replacing the water with dilute iodine solution.

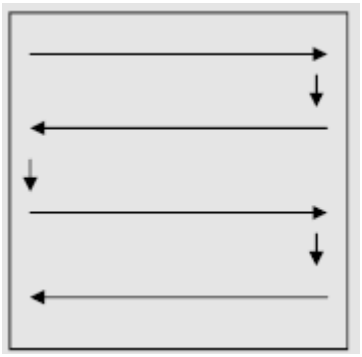

Figure 1. Observation Pattern

Part Two – Fecal Flotation

1. Collect 1 gram of a fecal sample in the medicine cup provided.
2. Add enough flotation solution to the medicine cup to cover the sample and mix thoroughly with a toothpick.
3. Prepare a test tube with a funnel and several layers of cheesecloth in a test tube rack. See Figure 2.
4. Pour the sample from the cup through the cheesecloth into the test tube.

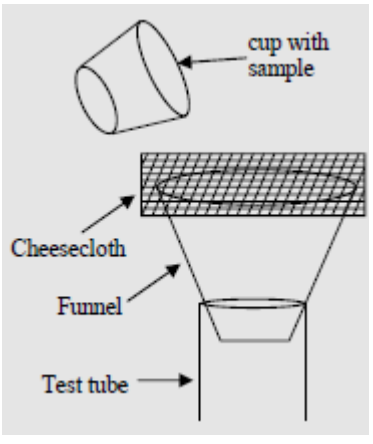

Figure 2. Experiment Setup

5. Use a pipette to add fresh flotation solution to the test tube, so that it is completely filled and a meniscus is formed on the top to the test tube (Figure 3). Do not allow too high of a liquid level, or the solution will drip down the outside of the test tube when the cover slip is applied.

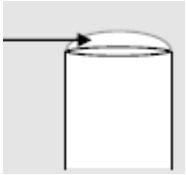

Figure 3. Meniscus

6. Place a cover slip on top of the meniscus of the test tube.
7. Allow the setup to remain undisturbed for 15-30 minutes. Make sure the flotation solution is touching the cover slip. This will allow the eggs to float to the top and adhere themselves to the cover slip.
8. Remove the cover slip from the test tube by lifting straight up. It is very important that you lift straight up so eggs will not slide off the cover slip.
9. Place the cover slip egg-side down onto a clean microscope slide.
10. Inspect the slide at low power with a microscope. Scan the slide in the pattern shown in Figure 1. If you observe any eggs, increase the magnification and inspect at high power.
11. Sketch the parasite eggs you find in Table 3 of Activity 8.3.2 Student Worksheet. Identify as many parasite eggs as possible.

Conclusion

1. How did your observations of the fecal smear compare to the flotation slide?

2. Which method do you think is more accurate? Why?

3. Why is it important to analyze fecal samples?

Name: _____

Activity 8.3.2 Student Worksheet

Table 1. ***Gross Examination***

Species of Animal	Age of sample	Color	Consistency	Presence of		
				Blood	Mucus	Adult Parasites
	Fresh Old		Normal Watery Hard	Yes No	Yes No	Yes No

Table 2. ***Fecal Smear Observations***

Water Preparation	Dilute Iodine Preparation

Table 3. ***Flotation Observations***
