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Lecture title: **Internal Parasite**

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Summary: Macroscopic and Microscopic examination of feces used to identify internal parasites.

- **Macroscopic examination:**

Some of intestinal parasites such as Ascarid species, segments of several Tapeworms, and Gastrophilus larvae can be recognized with the Unaided eye.

- **Microscopic examination:**

Microscopic examination can be divided in to two types of methods: Qualitative methods that used for identification of types, and Quantitative methods that used for counting of the number of eggs in feces.

Qualitative methods:

1 – Direct smear: Reagent needed: Water or Physiological saline. The direct smear method is a rapid and easily completed procedure, but eggs and Oocysts are not concentrated. It should be used only when. It is important to detect worm eggs and larvae
1- very small samples are available.
2- lack of equipment's.
3- time prevents the use of a more accurate techniques.

Procedure of Direct smear:

1-Put a small quantity of feces on a slide.
2-Dilute this quantity with water.
3-Thoroughly mix, using an applicator stick,
4-Until obtaining homogeneous and sufficiently transparent preparation
5-The largest particles can be moved aside.
6-A cover glass is applied and the smear is examined under the microscope

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Advantages and Dis advantages:

The advantages of this method are: short of time and minimal equipment needed and costar.

Dis advantages: negative result with this method is not always reliable and the animal may be incorrectly assumed to be free of parasite. This method also leaves a lot of fecal debris on the slide.

2- Fecal Flotation: This procedure based on differences in specific gravity of parasite eggs and larvae and that of fecal debris.

Reagent needed: Type of saturated solution

1- sugar solution, saturated 1.12
2- zinc sulfate, density 1.18- 1.22
3- salt solution, density 1.19
4- sodium chloride, density 1.18 -1.2
5- sodium nitrate, density 1.18
6- magnesium sulfate, density 1.28
7- zinc chloride, density 1.18

Advantages and Dis Advantages:

Advantage: is used to diagnosis the Nematodes, Sugar or salts solution added to water to increase its specific gravity. A liquid with a specific gravity higher than that of eggs.
Disadvantage: it is not suitable for eggs Trematode and some Cestodes.

Procedure of Flotation methods:

1- put about 2g of the fecal sample in 100 ml glass beaker and some of concentration solution
2- mixed intensity by means of a spatula to obtain a relatively homogeneous mixture
3- dilute to 90 ml with the concentrated solution.
4- strain the solution through a fine sieve to press out the large particles.

5- let the solution settle for a few minutes until the air – bubbles have all escaped then carefully place a cover glass on top of the liquids.

The latter will float up to surface. Nematode and Some Cestodes eggs float in a liquid with a specific gravity of between 1.10 and 1.20; Trematode eggs, which are much heavier require a specific gravity of 1.30 -1.35.
The flotation solutions used for nematode and Cestodes ova mainly based on Sodium chloride or sometimes Magnesium sulfate, and for Trematode eggs, saturated solution of zinc chloride or zinc sulfate are widely used. Most parasite eggs have specific gravity between 1.1 and 1.2, whereas Tap water is only slightly higher than 1, therefore, parasite eggs are too heavy to float in tap water.

3- Sedimentation methods:

For Trematode eggs, solution is tap water.

1- Homogenize 3g of feces with water and pass the suspension through a coarse mesh sieve (250 um) thoroughly was the material retained screen using a fine water jet and discard the debris.

2- transfer the filtrate to a conical flask and allow to stand for 2 minutes, remove the supernatant and transfer the remainder (approximately 12 – 15 ml) to a flat-bottomed tube
3- after sedimentation for a further 2 minutes the supernatant is again drawn off, a few drops of 5 %

Methylene blue added and the sediment screened using a low power stereo microscope any Trematode eggs are readily visible against the pale blue back – ground. Egg of *Fasciola hepatica*.

References:

Coles, E.H. (1968) Veterinary Clinical Pathology. WB Saunders Company Philadelphia and London,