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Confirming Helminth Infection

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Extended Abstract

We are using materials available from Ward (preserved eggs) and Carolina Biological (living *Hymenolepis diminuta* eggs in feces) to simulate parasite identification with tests based on protocols routinely used by practicing veterinarians. For the first activity we simply mix eggs from three or four helminths and students use a key to identify which species are represented. The benefits of the first part of the activity is that the preserved eggs are those of human parasites and so working with them can lead to a discussion of the impact of important human helminth parasites and their life cycle.

Students then prepare their own sample of living eggs of *H. dimuta* to test for infection, given sucrose solutions they also prepare that differ in specific gravity. This activity simulates common flotation tests conducted by veterinarians to test for parasite infection. It's a fun exercise for students, and they are working with a relatively safe parasite (in terms of potential for human infection). We supplement the exercises with material that discusses other protocols used for testing for parasite infection.

In this activity students first examine a slide containing a small amount of feces to become familiar with *H. diminuta* eggs.

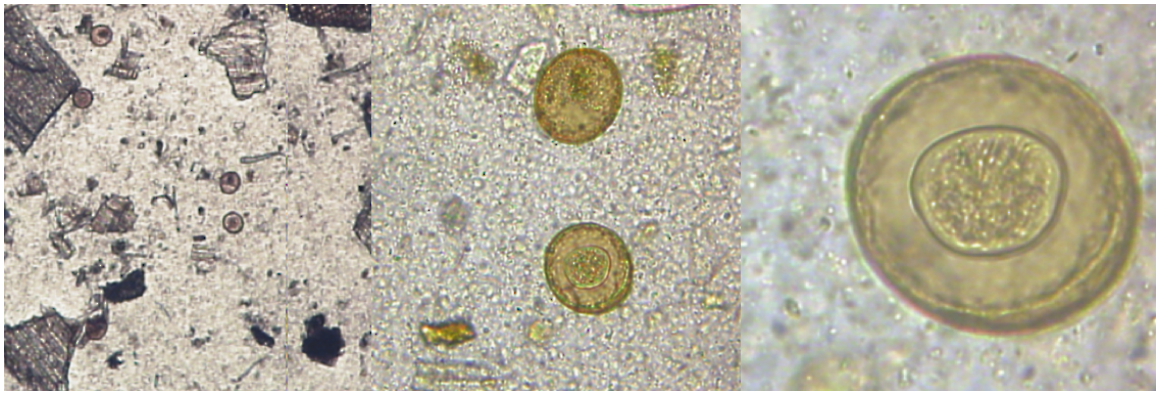

Figure 1. *Hymenolepis dimuta* eggs under the sterro scope at 80x, light microscope at 200x and light microscope at 400x.

Students then conduct floatation tests to determine which solution, of those available of different specific gravities, yields the greatest number of eggs. Students find that 6-12 eggs will adhere to cover slips places over sucrose solutions above specific gravities of 1.22 or percent solutions above 122% sucrose solutions (reagent grade sucrose in deionized water).

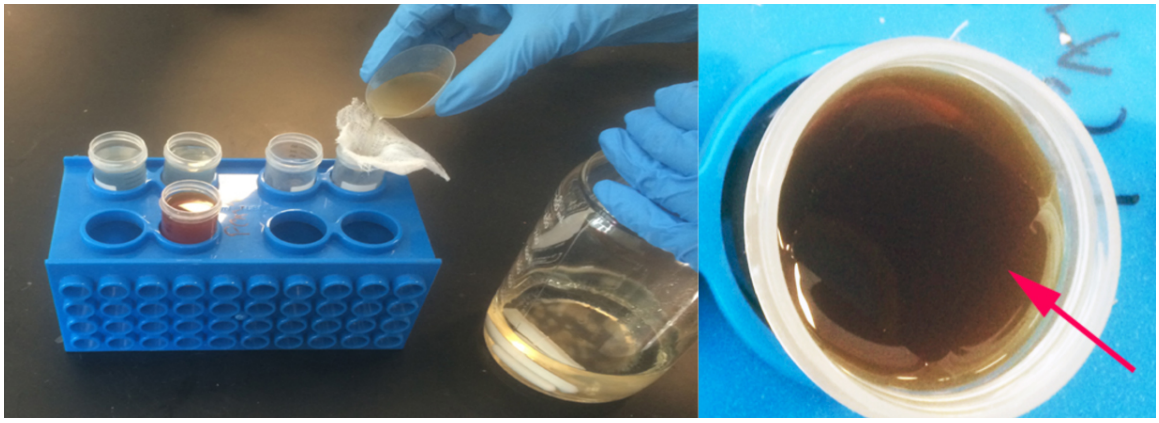

Figure 2. Students adding fecal material to sucrose solutions. Material is poured through two layers of cheesecloth to remove large debris before more sucrose solution is added to test tube. Any eggs that rise to the surface will stick to a cover slip floated on the meniscus of the solution.

The feces that contain *Hymenolepis diminuta* eggs are supplied by Carolina Biological(Item # 132234). These are large eggs, easily located by students.

Questions at the end of the exercise, ask students to predict the specific gravity solutions best used for various parasite species.

Experimentation has also indicated that *H. diminuta* eggs can be kept for three to four months in a refrigerator, although the recommendation from Carolina Biological is that the eggs be used within a two weekperiod. Students are directed to use a scant half teaspoon of fecal material, and mix it with 20 mls of deionized water before adding it to the sucrose solution.

We developed the exercise using a kit from Ward's science (Item # 36224) which furnishes test tubes, coverslips, reagent grade sucrose and an iodine solution for staining eggs prior to microscopic examination. The *H. dimiuta* eggs are large and so we no longer use the iodine solution. We simply order reagent grade sucrose and use centrifuge tubes wide enough to accommodate cover slips floating on the surface of the solution contained in them.

Link to Original Poster

http://www.ableweb.org/volumes/vol-37/poster?art=80

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