

PARASITOLOGY

INTRODUCTION

The Parasitology section detects and identifies intestinal parasites human illness. Specimens from non-intestinal sites are accepted for examination or referral when clinical symptoms suggest a parasitic involvement. Medically significant arthropods and other unusual specimens will also be accepted and referred for expert analysis as needed.

SPECIMEN COLLECTION

Each specimen must be labeled with the patient's name or other unique identifier. The request form accompanying the specimen must be filled out completely. Unlabeled specimens will be rejected and reported as unsatisfactory. Do not use kits beyond the expiration date on the mailer.

- A. Intestinal Parasites: The laboratory provides the traditional two vial intestinal parasite collection kit. Commercially available single vial collection kits are accepted but these may not preserve the parasites as well as the two vial systems. Since some parasites are passed intermittently collection of specimens on at least two consecutive days is recommended to improve detection. Collect one specimen per day until two to three specimens have been collected.
- **Fecal Specimens**: Stool specimens should not be mixed with foreign material such as water from the toilet or with urine. The feces can be passed onto dry surface such as newspaper, bedpan, or plastic wrap. From this, collect a marble-sized mass of feces using applicator sticks (not provided) and place this amount into the specimen bottle. Mix thoroughly by shaking the bottle vigorously after the bottle cap has been tightened securely. Try to minimize stool contact with water, dirt, or urine, as these contaminants can lead to degeneration of the parasites and a missed diagnosis. Specimens containing anti-diarrheal compounds, barium, bismuth, or mineral oil interfere with the parasite examination and render the specimen unsatisfactory for diagnosis. Note that antibiotic therapy can cause a temporary decrease or absence of organisms for two or three weeks. Both vials (formalin and PVA) are essential for an accurate examination. The fecal material should be put in the preservatives as soon as it is passed. Thorough mixing of the specimen with the preservatives is important. Do not refrigerate the preservative before or after adding the specimen. The PVA preservative congeals at refrigerator temperatures and the specimen is unusable. If the PVA vial in the kit is congealed when received, as can happen in the winter, it may turn back to liquid if heated in hot tap water (50°C).
 - **Pinworm Specimens**: This test is provided to county health departments only. Collect specimens by pressing the adhesive paddle on and around the rectal

mucosa to pick up the Pinworm eggs. Collect the specimen first thing in the morning before the eggs are dislodged. Place the paddle back in its tube and put the tube in the bottle to return to the laboratory. Collection on three consecutive days is recommended. Try to avoid getting fecal material on the slide as this obscures the pinworm ova and makes it hard to see them during microscopic examination.

- Whole Worms or proglottids: Place the specimen in a clean, screw-capped container with physiological saline and mail to the parasitology laboratory immediately. Please **DO NOT** use a bottle containing preservative because this will interfere with the staining used to highlight the internal structures.

B. Other Specimens:

- Cryptosporidium: Available on request for patients meeting at least one of the following criteria: watery diarrhea, immunosuppressed, less than 5 years of age, institutionalized, or the contact of a known case.
- Urine (Submit Only Formalin Preserved Urine Specimens): The optimal urine specimen for revealing eggs of *Schistosoma haematobium* has been shown to be one passed about or shortly after noon. Eggs are more frequently present in the last few drops of the specimen. Exercise also increases the chances of finding eggs. Daily examinations for three consecutive days should be performed. It is essential that a request for this test be noted on the requisition form accompanying a urine specimen.
- Sputum: In addition to feces, sputa can be collected in suspected cases of paragonimiasis. Formalin preserved sputum is preferred.
- Duodenal Drainage Material: For infections with *Strongyloides stercoralis* and *Giardia lamblia*, duodenal drainage often reveals organisms when stool specimens are negative. Formalin-preserved specimens are preferred.
- Sigmoidoscopic Material: Formalin-preserved material is preferred.
- Aspirated Material: Liver abscesses are commonly aspirated for parasitic examination. Generally, organisms are located in the peripheral area of a liver abscess. At least two portions of the exudate should be removed. The first portion, usually yellowish-white, seldom contains amoebae. Later portions, reddish in color, are more likely to contain organisms, and the portion containing material from near the wall is most likely to be positive for *Entamoeba histolytica*. Phone inquiries are encouraged when questions arise regarding parasitic examination of any unusual specimen. Formalin and PVA preserved material is preferred.

- C. Arthropods: Ticks and other ectoparasites can be submitted for identification. Unusual organisms are identified by arrangement with the entomology department at KSU. Preservatives and transport conditions vary with the type of insect, please call the lab at (785) 296-1620 for handling and shipping information.
- D. Blood and Tissue Parasites: Certain parasites will be found in the peripheral blood in the highest numbers at different times. In the case of suspected filariasis, the laboratory should be contacted for the optimum collection times.

Blood smears for Malaria, *Babesia*, and other blood parasites can be made with blood from either finger prick or venipuncture. Blood films should be prepared before anticoagulants are added because the addition of these will prevent blood from sticking to the slide and may interfere with staining. Prepare a thick and thin smear (call for instructions, if needed). Do not use a fixative. If possible also send a whole blood specimen in EDTA anti-coagulant (purple top tube). Parasites in blood smears will be identified by CDC.

SHIPMENT OF SPECIMENS

Ship all specimens as quickly as possible after collection. Choose collection dates so that there will be limited delay in transit time to the laboratory and try to avoid collection times which will be delayed over the weekend before specimen arrives at the laboratory. Please contact the laboratory before sending unusual or large numbers of specimens (epidemics or surveys) to establish that the specimens can be analyzed.

REPORTING PROCEDURES

Results are generally reported in two or three days following the arrival of the specimen. More time may be required in unusual situations. Results will be telephoned upon request.

REFERENCES

Garcia, Lynne S. 1999. *Practical Guide to Diagnostic Parasitology*. American Society for Microbiology, Washington, D.C. 20005

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Garcia, Lynne S. and David A. Bruckner. 1993. *Diagnostic Medical Parasitology*, 2nd ed. American Society for Microbiology, Washington, D.C. 20005