

**Being Fixated on Stool Stains:
How to be sane in the insane world of
stool fixation and preservation!**

ASCLS Region X

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I. Ova and Parasite Exam

A. Direct Exam

1. Sterile Saline
2. Iodine

B. Concentrate Exam

1. Flotation using Zinc sulfate
2. Formalin/Ethyl acetate sedimentation

C. Permanent Stain

1. Trichrome stain
 - a. Reagents
2. Iron hematoxylin stain

II. The Protozoa

(Phylum Sarcomastigophora: amebae and flagellates)

A. The Amebae

1. *Entamoeba histolytica*
2. *Entamoeba coli*
3. *Entamoeba harmanni*
4. *Entamoeba polecki*
5. *Endolimax nana*
6. *Iodamoeba buetschlii*

B. The Flagellates

1. *Dientamoeba fragilis*
2. *Giardia lamblia*
3. *Chilomastix mesnili*

C. *Blastocystis hominis*

III. Stool Preservatives/Fixatives

- A. LV-PVA
- B. Schaudinn's
- C. MIF (merthiolate-iodine-formaldehyde)
- D. SAF (sodium acetate-acetic acid-formalin)
- E. STF (Streck Tissue Fixative)
- F. Modified PVA (copper, zinc)
- G. Single-Vial-Fixatives

IV. The Trichrome (Fine Tuning)

- A. Quality Control
- B. Slide prep
- C. Other Factors

V. Permanent Stain/Fixative Comparisons

- A. STF (Streck Tissue Fixative) vs PVA
- B. Various Fixative/Protozoa and Permanent Stain Comparisons
- C. Protozoa Morphology/Identification Techniques

VI. Final Comments

References

- Garcia, L. S., Shimizu, R. Y., Brewer, T. C., Bruckner, D. A. 1983. Evaluation of intestinal parasite morphology in polyvinyl alcohol preservative: comparison of copper sulfate and mercuric chloride bases for use in Schaudinn fixative. *J. Clin. Microbiol.* 17:1092-1095.
- Garcia, L. S., Shimizu, R. Y. 1998. Evaluation of Intestinal Protozoan Morphology in Human Fecal Specimens Preserved in EcoFix: Comparison of Wheatley's Trichrome Stain and EcoStain. *J. Clin. Microbiol.* 36:1974-1976.
- Garcia, L. S., Shimizu, R. Y., Shum, A., Bruckner, D. A. 1993. Evaluation of intestinal protozoan morphology in polyvinyl alcohol preservative: comparison of zinc sulfate- and mercuric chloride-based compounds for use in Schaudinn's fixative. *J. Clin. Microbiol.* 31:307-310.
- Horen, P. W. 1981. Modification of Schaudinn Fixative. *J. Clin. Microbiol.* 13:204-205.
- Jensen, B., Kepley, W., Guarner, J., Anderson, K., Anderson, D., Clairmont, J., De L'aune, W., Austin, E. H., Austin, G. E. 2000. Comparison of Polyvinyl Alcohol Fixative with Three Less hazardous fixatives for Detection and Identification of Intestinal Parasites. *J. Clin. Microbiol.* 38:1592-1598.
- Nace, E. K., Steurer, F. J., Eberhard, M. L. 1999. Evaluation of Streck Tissue Fixative, a Nonformalin Fixative for Preservation of Stool Samples and Subsequent Parasitologic Examination. *J. Clin. Microbiol.* 37:4113-4119.

- **Pietrzak-Johnston, S. M., Bishop, H., Wahlquist, S., Moura, H., De Oliveira Da Silva, N., Pereira Da Silva, S., Nguyen-Dinh, P. 2000. Evaluation of commercially Available Preservatives for Laboratory Detection of Helminths and Protozoa in Human Fecal Specimens. J. Clin. Microbiol. 38: 1959-1964.**

- **Alpha-Tec Systems, Inc. 2006. Alpha-Tec Systems catalog/website. Alpha-Tec Systems, Inc., Vancouver, WA.**
- **Centers for Disease Control & Prevention, National Center for Infectious Diseases, Division of Parasitic Diseases website (DPDx Laboratory Identification of Parasites of Public Health Concern).**
- **Department of Health and Human Services, Centers for Disease Control & Prevention website (Public Health Image Library).**
- **Medical Chemical Corporation, Inc. 2005. Medical Chemical Corporation, Inc catalog/website. Medical Chemical Corporation, Inc., Torrance, CA**
- **Meridian Diagnostics, Inc. 2007. Meridian catalog/website. Meridian diagnostics, Inc., Cincinnati, Ohio.**
- **Para Site online, website (Lynne S. Garcia, M.S., MT(ASCP), CLS(NCA), BLM(AAB), F(AAM), Director, Consultantation and Training Services (Diagnostic Medical Parasitology and Health Care Administration).**

