



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 013

Subject: Collection Vial Specimens

TECHNICAL TIP OVERVIEW:

Liqui-PREP™ TIPS are intended to be guidelines for processing cytology specimens. The Laboratory Professional may use these guidelines or make modifications as needed to process a given specimen. In this section, each of the Liqui-PREP™ suggested basic steps will be addressed in detail along with some supporting publications.

These specimens generally have good cellularity and are collected using a collection device into a Liqui-PREP™ Collection Vial or rinsing with mouth wash. Some specimen types are buccal, cervical, anal and buccal rinsing with mouthwash. Anal, buccal and buccal rinsing specimens normally do not require clearing of mucous, whereas some anal and cervical specimens may require cleaning. The appropriate LGM International products are listed below by the specimen type.

SUGGESTED LGM INTERNATIONAL PRODUCTS FOR PROCESSING:

30 Series products including 15ml Centrifuge Tubes: 30-050 (50 processes); 30-300 (300 processes) Liqui-PREP™ Cytology Processing Kit

- Liqui-PREP™ Preservative Vials (Fill: 10ml per vial) available in 50 vial and 300 vial configurations.
- Liqui-PREP™ Cellular Base Solution (Fills: range 38ml or 225ml per bottle)
- Boxes of 15ml Plastic Centrifuge Tubes (100 tubes)

30 Series products without Centrifuge Tubes: 30-1001 (100 processes); 30-3001 (300 processes) Liqui-PREP™ Cytology Processing Kit.

- Liqui-PREP™ Preservative Vials (Fill: 10ml per vial) available in 100 vial and 300 vial configurations.
- Liqui-PREP™ Cellular Base Solution (Fills: range 38ml or 225ml per bottle)

40 Series products including Cleaning Solution and 15ml Centrifuge Tubes: 40-100 (100 processes); 40-300 (300 processes) Liqui-PREP™ Special Processing Kit

- Liqui-PREP™ Preservative Vials (Fill: 10ml per vial) available in 100 vial and 300 vial configurations.
- Liqui-PREP™ Cleaning Solution (Fill: 410ml per bottle)
- Liqui-PREP™ Cellular Base Solution (Fills: range 38ml or 225ml per bottle)
- Boxes of 15ml Plastic Centrifuge Tubes (100 tubes)

Any questions, contact your local Liqui-PREP™ representative or:

LGM International, Inc.
285-A North Drive
Melbourne, FL USA 32934
Telephone: (321) 254-0480; Fax: (321) 254-0481
Email: sales@liquipreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 013

Subject: Collection Vial Specimens

SUGGESTED LGM INTERNATIONAL PRODUCTS FOR PROCESSING:

40 Series products including Cleaning Solution but without 15ml Centrifuge Tubes: 40-1001 (100 processes); 40-3001 (300 processes) Liqui-PREP™ Special Processing Kit

- Liqui-PREP™ Preservative Vials (Fill: 10ml per vial) available in 100 vial and 300 vial configurations.
- Liqui-PREP™ Cleaning Solution (Fill: 410ml per bottle)
- Liqui-PREP™ Cellular Base Solution (Fills: range 38ml or 225ml per bottle)

Liqui-PREP™ Useful Accessories

- 60-010: Liqui-PREP™ Collection Vials - 200 vials (10ml per vial)
- 60-1000: Liqui-PREP™ Preservative Solution - 4 bottles (990ml per bottle)
- 60-2000: Liqui-PREP™ Preservative Solution - 4 bottles (1,880ml per bottle)
- 60-4000: Liqui-PREP™ Preservative Solution - 4 bottles (3,750ml per bottle)
- 70-500: Liqui-PREP™ Cleaning Solution - 6 bottles (410ml per bottle)
- 80-1000: Liqui-PREP™ Lytic Reagent - 4 bottles (990ml per bottle)

Specimen Collection:

Some Specimen Types

- **Buccal and other similar specimens** - These specimens are usually collected using a collection device such as a collection brush. The specimen is collected and the device is placed directly into the Liqui-PREP™ Collection Vial. The specimen begins preservation immediately upon collection.
- **Buccal Specimen collected using Mouth Wash** - These specimens are collected using an “over-the-counter” mouth wash. The patient, using approximately 5ml to 10ml of mouth wash, rinses their mouth for approximately 5 minutes and spits the mouth wash into a container containing 5ml to 10ml of Liqui-PREP™ Preservative Solution or into any type of collection container without Liqui-PREP™ Preservative Solution. Collection with Liqui-PREP™ Preservative Solution reduces processing steps and time.
- **Cervical, anal and other similar specimens** - These specimens are collected using a collection device. The specimen is collected and placed directly into the Liqui-PREP™ Collection Vial. The specimen begins preservation immediately upon collection.

Any questions, contact your local Liqui-PREP™ representative or:

LGM International, Inc.
285-A North Drive
Melbourne, FL USA 32934
Telephone: (321) 254-0480; Fax: (321) 254-0481
Email: sales@liquipreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 013

Subject: Collection Vial Specimens

Specimen Preparation: VIAL COLLECTED SPECIMENS

Vial Collected Specimens (Anal, cervical, Buccal, etc.) - Mix the specimen well and pour the specimen into a 15ml centrifuge tube.

NOTE: If mucous is a suspected issue, pipette 4ml of Liqui-PREP™ Cleaning Solution into the 15ml centrifuge tube prior to pouring the well mixed specimen into the centrifuge tube.

Specimen Cleaning and/or Concentration:

After specimen preparation, all of these specimens are in 15ml centrifuge tubes. The specimen centrifuge tubes are centrifuged at 800xg for approximately 10 minutes.

After centrifugation, the supernatant is decanted by inverting the centrifuge tube.

Cellular Encapsulation and Slide Production:

“Working Tube” - The use of a “Working Tube” is the simplest and most consistent method of diluting and encapsulating the cells from a cell pellet. Any small test tube can be used as the “Working Tube”. This is also the most efficient use of Liqui-PREP™ Cellular Base Solution.

- Pipette 300µl to 500µl of Liqui-PREP™ Cellular Base Solution into a working tube. The amount of Liqui-PREP™ Cellular Base Solution to be used depends on the cellularity of the slide favored by the end user. LGM International, Inc. uses 400µl of Liqui-PREP™ Cellular Base Solution.
- After mixing the cellular pellet well to produce a homogeneous suspension, pipette 50µl of the cellular suspension into the “Working Tube”.
- Mix the “Working Tube” well using a vortex mixer.
- Withdraw a 50µl aliquot from the well mixed “Working Tube”. Dispense and apply this 50µl aliquot onto a Microscope slide.
- Allow the slides to dry, stain and read.

Any questions, contact your local Liqui-PREP™ representative or:

LGM International, Inc.
285-A North Drive
Melbourne, FL USA 32934
Telephone: (321) 254-0480; Fax: (321) 254-0481
Email: sales@liquipreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 013

Subject: Collection Vial Specimens

Specimen Preparation: BUCCAL MOUTHWASH

Buccal Mouthwash Specimens without Preservative Solution at collection - Mix the specimen well.

- Pour the well mixed specimen into a 50ml centrifuge tube.
- Pipette approximately 10ml of Liqui-PREP™ Preservative Solution into the centrifuge tube and mix by inverting.
- Allow to fix for at least 30 minutes.
- Centrifuge the specimen at ~1000xg for approximately 10 minutes.
- Decant the supernatant.
- Rinse the resulting cellular pellet into a 15ml centrifuge tube using 4ml aliquots of Liqui-PREP™ Preservative Solution.

Buccal Mouthwash Specimens in Liqui-PREP™ Preservative Solution at collection

- Mix the specimen well.
- Pour the well mixed specimen into a 50ml centrifuge tube.
- Centrifuge the specimen at 1000xg for approximately 10 minutes.
- Decant the supernatant.
- Rinse the resulting cellular pellet into a 15ml centrifuge tube using 4ml aliquots of Liqui-PREP™ Preservative Solution.

Specimen Cleaning and/or Concentration:

After specimen preparation, all of these specimens are in 15ml centrifuge tubes. The specimen centrifuge tubes are centrifuged at 800xg for approximately 10 minutes.

After centrifugation, the supernatant is decanted by inverting the centrifuge tube.

Any questions, contact your local Liqui-PREP™ representative or:

LGM International, Inc.
285-A North Drive
Melbourne, FL USA 32934
Telephone: (321) 254-0480; Fax: (321) 254-0481
Email: sales@liquipreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 013

Subject: Collection Vial Specimens

Cellular Encapsulation and Slide Production: BUCCAL MOUTHWASH

“Working Tube” - The use of a “Working Tube” is the simplest and most consistent method of diluting and encapsulating the cells from a cell pellet. Any small test tube can be used as the “Working Tube”. This is also the most efficient use of Liqui-PREP™ Cellular Base Solution.

- Pipette 300µl to 500µl of Liqui-PREP™ Cellular Base Solution into a working tube. The amount of Liqui-PREP™ Cellular Base Solution to be used depends on the cellularity of the slide favored by the end user. LGM International, Inc. uses 400µl of Liqui-PREP™ Cellular Base Solution.
- After mixing the cellular pellet well to produce a homogeneous suspension, pipette 50µl of the cellular suspension into the “Working Tube”.
- Mix the “Working Tube” well using a vortex mixer.
- Withdraw a 50µl aliquot from the well mixed “Working Tube”. Dispense and apply this 50µl aliquot onto a Microscope slide.
- Allow the slides to dry, stain and read.

Minimizing Red Blood Cells in Vial Collected Specimens:

The Liqui-PREP™ Preservative Solution does have a slight lytic attribute. If the specimen has a large amount of blood it may be necessary to modify the procedure to remove some red blood cells. This removal can be performed during specimen preparation or after centrifugation or at both points in processing.

Pre-specimen preparation Red Blood Cell Removal:

- Pipette 5ml of Liqui-PREP™ Lytic Reagent into the Liqui-PREP™ Collection Vial, mix well and allow to lyse for 5 to 15 minutes.
- Pour the specimen into a 15ml centrifuge for approximately 800xg for approximately 10 minutes.
- Decant and Pipette 4 to 8ml of Liqui-PREP™ Preservative Solution into the 15ml centrifuge tube and mix well. Hold the specimen for 15 minutes prior to processing.
- Pipette 3 to 4ml of Liqui-PREP™ Cleaning Solution into the 15ml centrifuge tube and mix by inverting.

Any questions, contact your local Liqui-PREP™ representative or:

LGM International, Inc.
285-A North Drive
Melbourne, FL USA 32934
Telephone: (321) 254-0480; Fax: (321) 254-0481
Email: sales@liquipreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 013

Subject: Collection Vial Specimens

Specimen Cleaning and/or Concentration: Minimizing Red Blood Cells in Vial Collection Specimens

After specimen preparation, all of these specimens are in 15ml centrifuge tubes. The specimen centrifuge tubes are centrifuged at 800xg for approximately 10 minutes.

After centrifugation, the supernatant is decanted by inverting the centrifuge tube.

Minimizing Red Blood Cells in Vial Collected Specimens Post Cleaning:

Post Specimen Cleaning and/or Concentration Red Blood Cell Removal:

- Decant the supernatant.
- Pipette equal amounts (~4 to 5ml) of Liqui-PREP™ Preservative Solution and Liqui-PREP™ Lytic reagent into the decanted 15ml centrifuge tube.
- Mix well and allow to rest for 10 to 15 minutes.
- Centrifuge the 15ml centrifuge tube at ~800xg for 10 minutes.
- Decant the supernatant, pipette ~4 to 8ml of Liqui-PREP™ Preservative Solution and mix.
- Hold the specimen for 15 minutes prior to processing.
- Centrifuge the 15ml centrifuge tube at ~800xg for 10 minutes.

Cellular Encapsulation and Slide Production: MINIMIZING RED BLOOD CELLS IN VIALS

“Working Tube” - The use of a “Working Tube” is the simplest and most consistent method of diluting and encapsulating the cells from a cell pellet. Any small test tube can be used as the “Working Tube”. This is also the most efficient use of Liqui-PREP™ Cellular Base Solution.

- Pipette 300µl to 500µl of Liqui-PREP™ Cellular Base Solution into a working tube. The amount of Liqui-PREP™ Cellular Base Solution to be used depends on the cellularity of the slide favored by the end user. LGM International, Inc. uses 400µl of Liqui-PREP™ Cellular Base Solution.
- After mixing the cellular pellet well to produce a homogeneous suspension, pipette 50µl of the cellular suspension into the “Working Tube”.
- Mix the “Working Tube” well using a vortex mixer.
- Withdraw a 50µl aliquot from the well mixed “Working Tube”. Dispense and apply this 50µl aliquot onto a Microscope slide.
- Allow the slides to dry, stain and read.

Any questions, contact your local Liqui-PREP™ representative or:

LGM International, Inc.
285-A North Drive
Melbourne, FL USA 32934
Telephone: (321) 254-0480; Fax: (321) 254-0481
Email: sales@liquipreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 013

Subject: Collection Vial Specimens

References:

- "Evaluation of the Liqui-PREP™ Encapsulation System by Comparison with the SurePath™ PREP", J. Geyer, PhD.; J. Marino, CMIAC - Seacoast Pathology, New Hampshire, USA, LGM International, Inc. Florida, USA.
- "Clinical Evaluation of Liqui-PREP™ System", S. Rangdaeng, M.D. - Department of Pathology, Faculty of Medicine, Chiang Mai University
- "Evaluation of the Direct-to-Vial Use of the Liqui-PREP™ Cytology Preparation", L. Feng, M.D.; S. Han, M.D.; L. Tian, M.D.; J. Zhu, M.D.; W. Miao, M.S.; J. Yue, M.D.; J. Geyer, PhD - Department of Obstetrics and Gynecology, The First Facility Hospital, Norman Bethun Medical School of Jilin University, Changchun, China, LGM International, Inc. Florida, USA.
- "Liqui-PREP™ a New Liquid Based Cervical Cytology Method in Comparison with Conventional Pap Smear in Developing Countries", N. Behtash, M.D.; Z. Nazari, M.D.; M. Khaniki, M.D.; K. Zendedel, M.D.; F. Fereshteh, M.D.; M. Shariat, M.D. - Department of Gynaecology and Oncology, Vali Asr Hospital, Iran; Department of Cytopathology, Central Pathology Center, Emam Khomeini Hospital, Tehran University of Medical Science, Tehran, Iran; Department of Epidemiology, University of Karolinska, Stockholm, Sweden; Department of Gynecology and oncology, Gila University of Medical Sciences, Iran; Vali Asr Reproductive Health Research Center, Emam Khomeini Hospital, Tehran, Iran.
- "Direct-to-Vial Use of the Liqui-PREP™ Cytology System", J. Park, M.D.; E. Jung, M.D.; Y. Choi, M.D. - Eone Reference Laboratory, Seoul, S. Korea.
- "Clinical Results of the Liquid-based Cervical Cytology Tool, Liqui-PREP™, in Comparison with Conventional Smears for Detection of Squamous Cell Abnormalities", M. Canda, M.D.; N. Demir, M.D.; O. Sezer, M.D.; L. Doganay, M.D.; R. Ortac, M.D. - Obstetrics & Gynecology Unit, Pathology Unit, Kent Hospital, Izmir, Turkey.
- "Clinical Utility of Liqui-PREP™ cytology system for primary cervical cancer screening in a large urban hospital setting in China", H. Deshou, M.C.; W. Changhua, M.D.; L. Qinyan, M.D.; L. Wei, M.D.; F. Wen, M.D. - Department of CytoPathology, Jiangxi Province Women and Children Health Care Hospital, China.
- "The Comparison of Cytology Findings of Liqui-PREP™ and Conventional Pap Smear", Mayis Universitesi, Turkey
- "Small Cell Carcinoma of Uterine Cervix: The comparison of Cytology Findings of Conventional and Liqui-PREP™ Pap smears", L. Huang, M.D.; C. Li, M.D.; C. Chen, M.D.; C. Lee, M.D., PhD; P. Chu, M.D. - Department of Pathology of Shin Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan.
- "High-Risk HPV Infection in men who have sex with men", N. Phanuphak, M.D.; N. Teeratakulpisarn, M.D.; S. Keelawat, M.D.; J. Anaworanich, M.D.; J. Palefsky, M.D. - Thai Red Cross Men's Sexual Health Clinic Team; University of California at San Francisco, California, USA.
- "Workload Analysis: Manual Liqui-PREP™ vs Automated ThinPrep 2000 Processor", J. Ronen, M.D. - Care-Med Clinic, Ramat Hasharon, Israel.

Any questions, contact your local Liqui-PREP™ representative or:

LGM International, Inc.
285-A North Drive
Melbourne, FL USA 32934
Telephone: (321) 254-0480; Fax: (321) 254-0481
Email: sales@liquiprepreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 013

Subject: Collection Vial Specimens

References:

- “Cervical Cancer Screening in Female Sex Workers: Evaluation of Different Modalities”, S. Rangdaeng, M.D.; Kritvatcharanun, M.D.J.; Settakorn, M.D.; N. Preechapornkul, M.D.; S. Nateewatana, MSc; S. Siriaungkul, M.D”; S. Khunamornpong, M.D.; J. Srisomboon, M.D. - Department of Pathology, Obstetrics and Gynecology, Faculty of Medicine, Chiang Mai University and AIDS control center, Region 10, Chiang Mai, Thailand.
- “Interobserver Reproducibility with Liqui-PREP™ Liquid-Based Cervical Cytology Screening in a Developing Country”, J. Settakorn, M.D.; S. Rangdaeng, M.D.; N. Preechapornkul, M.D.; S. Nateewatana, M.D.; K. Pongsiralai, M.D.; J. Srisomboon, M.D.; P. Thorner, M.D. - Department of Pathology, Faculty of Medicine, Chiang Mai University, Chaing Mai, Thailand.
- “Evaluation of Liqui-PREP™ Encapsulation Method for Liquid-Based Cytology: Cell Loss Estimates during Processing”, J. Geyer, PhD; J. Marino, CMIAC - Seacoast Pathology, New Hampshire, USA; LGM International, Inc., Florida, U.S.A.

Any questions, contact your local Liqui-PREP™ representative or:

LGM International, Inc.
285-A North Drive
Melbourne, FL USA 32934
Telephone: (321) 254-0480; Fax: (321) 254-0481
Email: sales@liquiprepreagents.com