



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 014

Subject: Moderate Volume Specimen Processing

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 have a volumes up to approximately 150ml. These specimens come to the laboratory in a container which requires concentration or other specimen preparation. Examples of these type of specimens are Sputum, Bronchial Washings, Urine, etc. Urine specimens can be low cellularity while Sputum and Bronchial Washings can be very cellular. Some of these specimens may require cleaning and removal of red blood cells during the specimen preparation process.

SUGGESTED LGM INTERNATIONAL PRODUCTS FOR PROCESSING:

30-050B (50 processes) Liqui-PREP™ Cytology Processing Kit

- 1 Bottle Liqui-PREP™ Preservative Solution (Fill: 990ml per bottle)
- 1 Bottles Liqui-PREP™ Cellular Base Solution (Fill: 26ml per bottle)
- 1 Box of 15ml Plastic Centrifuge Tubes (100 tubes)

30-100B (100 processes) Liqui-PREP™ Cytology Processing Kit

- 2 Bottle Liqui-PREP™ Preservative Solution (Fill: 990ml per bottle)
- 2 Bottles Liqui-PREP™ Cellular Base Solution (Fill: 26ml per bottle)
- 1 Box of 15ml Plastic Centrifuge Tubes (100 tubes)

30-100B1 (100 processes) Liqui-PREP™ Cytology Processing Kit

- 2 Bottle Liqui-PREP™ Preservative Solution (Fill: 990ml per bottle)
- 2 Bottles Liqui-PREP™ Cellular Base Solution (Fill: 26ml per bottle)

40-100B (100 processes) Liqui-PREP™ Special Processing Kit

- 1 Bottle Liqui-PREP™ Preservative Solution (Fill: 990ml per bottle)
- 1 Bottle Liqui-PREP™ Cleaning Solution (Fill: 410ml per bottle)
- 2 Bottles Liqui-PREP™ Cellular Base Solution (Fill: 38ml per bottle)
- 1 Box 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@liquiprepreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 014

Subject: Moderate Volume Specimen Processing

SUGGESTED LGM INTERNATIONAL PRODUCTS FOR PROCESSING:

40-100B1 (100 processes) Liqui-PREP™ Special Processing Kit

- 1 Bottle Liqui-PREP™ Preservative Solution (Fill: 990ml per bottle)
- 1 Bottle Liqui-PREP™ Cleaning Solution (Fill: 410ml per bottle)
- 2 Bottles Liqui-PREP™ Cellular Base Solution (Fill: 38ml per bottle)

80-2050 (48 processes) Liqui-PREP™ Respiratory Processing Kit

- 48 Liqui-PREP™ Respiratory Collection Vials (Fill: 15ml per vial)
- 1 Bottle Liqui-PREP™ Cellular Base Solution (Fill: 26ml per bottle)

35-0050 (50 processes) Liqui-PREP™ Urine Cup Processing Kit

- 50 Liqui-PREP™ Urine Preservative Cups (Fill: 55ml per vial)
- 1 Bottle Liqui-PREP™ Cellular Base Solution (Fill: 10ml per bottle)

35-0300 Liqui-PREP™ Bulk Urine Preservative Processing Kit

- 4 Bottles Liqui-PREP™ Preservative Solution (Fill: 3,750ml per bottle)
- 1 Bottle Liqui-PREP™ Cellular Base Solution (Fill: 38ml per bottle)

Liqui-PREP™ Useful Accessories

- 80-2051 Liqui-PREP™ Respiratory Collection Vials - 50 vials (15ml 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)
- 80-100: Liqui-PREP™ Lytic Reagent - 4 bottles (990ml per bottle)
- 35-0100: Liqui-PREP™ Urine Preservative Solution - 4 bottles (3,990ml per bottle)

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: 014

Subject: Moderate Volume Specimen Processing

Specimen Collection:

Specimen Types

- Sputum and similar specimens - These specimens are usually collected by the patient expectorating into a container. The Liqui-PREP™ Respiratory Collection vials is a collection product containing Liqui-PREP™ Preservative Solution in a 40ml wide mouth vial. The patient expectorates approximately 10ml of sputum into the collection vial. The specimen begins preservation immediately, while keeping the specimen hydrated which makes processing these specimens less of a problem.
- Bronchial Washings and similar specimens - These specimens are collected using a non-specified collection container. This is a clinical collection.
- Urine and similar specimens – The patient urinates in a urine cup. The specimen is delivered to the laboratory.

NOTE: LGM International, Inc. has a good Urine Transport Preservative, Liqui-PREP™ Urine Preservative Solution. Using Liqui-PREP™ Urine Preservative Solution at collection allows the urine specimen to be preserved and stabilized during transportation. If urine is not refrigerated or preserved immediately after collection, bacteria grow, amorphous material increases and crystals form due to pH shift. Using the Liqui-PREP™ Urine Preservative Solution resolves these issues.

Specimen Preparation: Respiratory Specimens

Note: Removal of mucous and red blood cells can be performed in the 50ml centrifuge tube during specimen preparation, in the 15ml centrifuge tube after specimen preparation or during both the 50ml and 15ml centrifuge tubes specimen preparation. The preparation below removes the mucous and red blood cells at both the 50ml and 15ml centrifuge tube phase.

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: 014

Subject: Moderate Volume Specimen Processing

Specimen Preparation: Respiratory Specimens

Sputum and similar specimens - These specimens arrive in the laboratory in an unspecified container.

- Pipette 10ml to 20ml of Liqui-PREP™ Preservative Solution into the unspecified container.
- Mix the container very well and allow to preserve for a minimum of 1 hour. (Old specimens may need up to 24 hours to hydrate.)
- Pipette approximately 8ml of Liqui-PREP™ Cleaning Solution into a 50ml centrifuge tube.
- Mix the specimen very well and pour into the 50ml centrifuge tube.
- Centrifuge at ~1000xg for approximately 10 minutes then decant the supernatant.
- Pipette 4ml of Liqui-PREP™ Cleaning Solution into a 15ml centrifuge tube.
- Mix the pellet and rinse the resulting cellular pellet into a 15ml centrifuge tube using aliquots of Liqui-PREP™ Preservative Solution, rinse the cellular pellet into a 15ml Centrifuge Tube. Total Volume should be 10ml to 14ml.

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@liquiprepreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 014

Subject: Moderate Volume Specimen Processing

Specimen Preparation: Respiratory Specimens

Sputum and similar specimens - These specimens arrive in the laboratory in a Liqui-PREP™ Respiratory Collection Vial.

- Pipette approximately 8ml of Liqui-PREP™ Cleaning Solution into a 50ml centrifuge tube.
- Mix the Liqui-PREP™ Respiratory Collection Vial well and pour into the 50ml centrifuge tube.
- Centrifuge at ~1000xg for approximately 10 minutes then decant the supernatant.
- Pipette 4ml of Liqui-PREP™ Cleaning Solution into a 15ml centrifuge tube.
- Mix the pellet and rinse the resulting cellular pellet into a 15ml centrifuge tube using aliquots of Liqui-PREP™ Preservative Solution, rinse the cellular pellet into a 15ml Centrifuge Tube. Total Volume should be 10ml to 14ml.

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: 014

Subject: Moderate Volume Specimen Processing

Specimen Preparation: Bronchial Washings and Similar Specimens

Bronchial Washings and similar specimens - These specimens are collected using a non-specified collection container. This is a clinical collection. After collection the container is sent directly to the laboratory.

- Pipette approximately 8ml of Liqui-PREP™ Cleaning Solution into a 50ml centrifuge tube.
- Mix the Bronchial washing well and pour it into the 50ml centrifuge tube.
- Pipette Liqui-PREP™ Preservative Solution into the Centrifuge tube to approximately 40ml or 45ml mark on the centrifuge tube.
- Mix the 50ml centrifuge tube. Allow to preserve for at least 1 hour.
- Centrifuge at 1000xg for approximately 10 minutes, then decant the supernatant and mix the cellular pellet well.
- Pipette 4ml of Liqui-PREP™ Cleaning Solution into a 15ml centrifuge tube.
- Rinse the resulting cellular pellet into a 15ml centrifuge tube using 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.

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@liquiprepreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 014

Subject: Moderate Volume Specimen Processing

Specimen Preparation: Urine and Similar Specimens

Urine and similar specimens - These specimens are collected using a **non-specified collection** container. After collection the container is sent directly to the laboratory.

- Mix the urine specimen well and pour approximately 45ml into a 50ml centrifuge tube.
- Centrifuge at 1000xg for approximately 10 minutes, then decant the supernatant.
- Mix the urine specimen well and pour the residual of the specimen into the 50ml specimen centrifuge tube.
- Centrifuge at 1000xg for approximately 10 minutes, then decant the supernatant.
- Rinse the resulting cellular pellet into a 15ml centrifuge tube using aliquots of Liqui-PREP™ Preservative Solution.
- Allow the specimen to preserve for at least 30 minutes prior to processing.

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: 014

Subject: Moderate Volume Specimen Processing

Specimen Preparation: Urine and Similar Specimens in Liqui-PREP™ Urine Cups

Urine and similar specimens - When the specimen arrives in the laboratory, it should be prepared as soon as possible.

- Mix the Liqui-PREP™ Urine Cup well and pour approximately 45ml into a 50ml centrifuge tube.
- Centrifuge at 1000xg for approximately 10 minutes, then decant the supernatant.
- Mix the Liqui-PREP™ Urine Cup well and pour the residual of the specimen into the 50ml specimen centrifuge tube.
- Centrifuge at 1000xg for approximately 10 minutes, then decant the supernatant.
- Rinse the resulting cellular pellet into a 15ml centrifuge tube using 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.

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@liquiprepreagents.com



Liqui-PREP™

The Next Generation of Liquid Cytology

Manual Technical Tips

TIP Number: 014

Subject: Moderate Volume Specimen Processing

References:

- “New Diagnostic Technique for Rapid Fluorescence Immunocytochemical Staining of Adenocarcinoma and Mesothelial Cells Using Liquid-Based Cytology”, A Morimoto, M.D. - Departments of Clinical Laboratory, Toki General Hospital, Toki, Japan; A. Ito, M.D. - Department of Surgery, Toki General Hospital, Toki, Japan ; K Hashimoto, M.D. - Department of Pathophysiological Laboratory Sciences, Nagoya University Graduate School of Medicine, Nagoya, Japan; A Nakano, M.D - Department of Clinical Laboratory, Toki General Hospital, Toki, Japan; T. Nagasaka, M.D.; T. Yokoi, M.D. - Department of Diagnostic Pathology, Aichi Medical University Hospital, Nagakute, Japan.
- “Liquid Based Cytology - Training outcomes of an inexperienced screener”, M. Southwood; J. Buckwell; C. Atkinson, Department of Pathology, Papworth Hospital NHS Foundation Trust, Cambridge, United Kingdom

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