

# Comparison of Liquid Based Cytology Platforms: Results From a Multicenter Canadian Trial

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## Introduction

CellSolutions offers a lower cost alternative to other commercial liquid base cytology (LBC) systems currently available. We set out to evaluate the performance of their Synermed Glucyte method as part of a multicenter Canadian trial TPAPT (transient persistent and persistent transforming study) evaluating HPV DNA, HPV mRNA, and novel cervical cancer biomarkers in patients presenting for colposcopy.

## Objective

To assess sensitivity, specificity, positive predictive value, and negative predictive value for Synermed Glucyte compared to Thin Prep and SurePath.

## Methodology

As part of the TPAPT study two separate cytology samples from the first 331 colposcopy patients were collected for inclusion into the study. The first sample was collected in Thin Prep media with the second separately collected sample placed in SurePath media. Samples from the SurePath media had a Pap stained slide and a ProEx C slide prepared and processed according to manufacturer's protocol. From the residual SurePath sample a Glucyte slide was prepared.

Using a binary classification test, sensitivity and specificity were calculated.

## Binary Classification Measures

	Glucyte	Thin Prep	SurePath
Sensitivity	86.9%	81.9%	83.7%
Specificity	49.6%	62.2%	66.9%
Positive Predictive Value	37.6%	43.9%	47.1%
Negative Predictive Value	91.5%	90.5%	92.1%

## Cytologic diagnoses for Liquid Based Cytology Methods

	Glucyte		Thin Prep		SurePath	
	No.	%	No.	%	No.	%
Negative	130	39.3	158	47.7	178	53.8
ASC	69	20.8	52	15.7	36	10.9
ASC-H	7	2.1	2	0.6	9	2.7
LSIL	68	20.5	81	24.5	43	13.0
HSIL	49	14.8	19	5.7	59	17.8
AGC	3	0.9	3	0.9	4	1.2
Unsatisfactory	4	1.2	16	4.8	0	0
AIS	1	0.3	0	0	2	0.6

## Quality Differences for Liquid Based Platforms

	Glucyte		Thin Prep		SurePath	
	No.	%	No.	%	No.	%
Endocervical Cells Absent	17	5.1	41	12.4	7	2.1
Endocervical Cells Present	310	93.7	274	82.8	324	97.9
Unsatisfactory	4	1.2	16	4.8	0	0

## Limitations

1) Cohort consists of colposcopy patients may not be generalizable to the screening population, 2) inherent limitation of histologic diagnosis as gold standard and subjective nature of ASC as a cytologic diagnosis, and 3) Glucyte slide was prepared after two SurePath slides for each sample.

## Results

Differences were noted in test performance using histologic cervical intraepithelial neoplasia (CIN) 2+ as the end point.

Glucyte demonstrated a sensitivity of 86.9% with a specificity of 49.6%, while Thin Prep was 81.9% and 62.2% respectively at a threshold of cytologic diagnosis of atypical squamous cells (ASC). The sensitivity and specificity for SurePath were 83.7% and 66.9%. Differences were noted in the presence or absence of endocervical component between the three methods as well and the rate of unsatisfactory specimens.

## Conclusion

These results may suggest there are only slight differences in the performance of the LBC platforms studied.

The results may suggest Glucyte is an acceptable alternative especially when considering cost effectiveness and specimen quality for laboratories looking to adopt or switch LBC platforms. There will be follow up of the cohort due to inherent limitation of histologic diagnosis.

## Disclosure Statement

Travel and conference fees paid by CellSolutions.

No financial conflicts to declare.