



## Technical Release Bulletin: Treating Highly Viscous Samples in Compliance with WHO 5<sup>th</sup>

Issue date: Monday, November 26, 2012

Attn: All SQA-V / QwikCheck™ GOLD (WHO 4<sup>th</sup> & 5<sup>th</sup> compliant software)

### Background:

The WHO 5<sup>th</sup> edition manual (page 13) describes the semen liquefaction as follows:

**“Immediately after ejaculation into the collection vessel, semen is typically a semi-solid coagulated mass. Within a few minutes at room temperature, the semen usually begins to liquefy (become thinner), at which time a heterogeneous mixture of lumps will be seen in the fluid. As liquefaction continues, the semen becomes more homogeneous and quite watery, and in the final stages only small areas of coagulation remain. The complete sample usually liquefies within 15 minutes at room temperature, although rarely it may take up to 60 minutes or more. If complete liquefaction does not occur within 60 minutes, this should be recorded.”**

WHO 5<sup>th</sup> describes high viscosity and the effect on semen parameters (page 15):

**“High viscosity can interfere with determination of sperm motility, sperm concentration, detection of antibody-coated spermatozoa and measurement of biochemical markers.”**

Further, WHO 5<sup>th</sup> describes Delayed Liquefaction (on page 14):

#### *2.3.1.1 Delayed liquefaction*

Occasionally samples may not liquefy, making semen evaluation difficult. In these cases, additional treatment, mechanical mixing or enzymatic digestion may be necessary.

1. Some samples can be induced to liquefy by the addition of an equal volume of physiological medium (e.g. Dulbecco's phosphate-buffered saline; see Appendix 4, section A4.2), followed by repeated pipetting.
2. **Inhomogeneity** can be reduced by repeated (6–10 times) gentle passage through a blunt gauge 18 (internal diameter 0.84 mm) or gauge 19 (internal diameter 0.69 mm) needle attached to a syringe.
3. **Digestion by bromelain, a broad-specificity proteolytic enzyme (EC 3.4.22.32), may help to promote liquefaction (see Box 2.2).**

### Information:

According to the WHO 5th edition manual, highly viscous or incompletely liquefied semen samples should be treated in order to reduce their viscosity which can interfere with the accuracy of the reported semen parameters. The methods for treating high viscosity or incompletely liquefied samples differ. The most effective method is limited proteolysis by broad-specificity proteolytic enzymes like bromelain or  $\alpha$ -chymotrypsin (QwikCheck™ Liquefaction Kit).

In order to provide a complete description of the sample and any additives for the physician, the SQA-V has an entry concerning the nature of the sample LIQUEFACTION and VISCOSITY that should be assessed and entered prior to the sample treatment (see below patient / sample data entry screen).

**SAMPLE TYPE SELECT**  
**FRESH/WASHED/FROZEN/POSTVASECTOMY**  
**VOLUME** 2.0 ml  
**WBC CONC.** **SELECT** < 1 M/ml / >= 1 M/ml  
**PH** 8.0  
**APPEARANCE** NORMAL / ABNORMAL  
**LIQUEFACTION** NORMAL / ABNORMAL  
**VISCOSITY** NORMAL / ABNORMAL

COMMENTS about treating the semen using the Liquefaction Kit can be entered via V-Sperm by opening the following screens below. The comments will appear in the second page of the Semen Analysis Report. In addition, the customer can attach this technical bulletin describing WHO 5th recommended treatment of highly viscous or incompletely liquefied samples.

Edit  
 Test Report  
 Print Results  
 Authorize

Test Parameter	Value	Unit	Ref. Value
# Mobile Sperm	N.A.	#	
# Immobile Sperm	N.A.	#	
# Total Sperm	N.A.	#	
# Mobile Sperm/Vol	N.A.	M	
# Immot. Sperm/Vol	N.A.	M	
# Total Sperm/Vol	N.A.	M	
% Normal Forms	N.A.	%	
% Normal Forms (w/ tails)	N.A.	%	
Abstinence (# of days)	3		
Agglutination	N		
Agglutination	Normal		
Comments	The semen sample high viscosity was reduced		
Cytoplasmic Droplets	N.A.		
Date Sample Collected	26/11/2012		
Date Sample Received	26/11/2012		
Fructose (µmol/mol)	N.A.		
FSC (µmol)	N.A.		
Prog. Sperm (M)	N.A.		
Head Defects	N.A.		
Neck/Midpiece Defects	N.A.		
Tail Defects	N.A.		
Revisibly (M/N)	N.A.		

Test Date: 26/11/2012 12:28  
 Patient ID: 123  
 First Name: [Blank]  
 Last Name: [Blank]  
 Sample Accession #: 12345678900000000000  
 Authorized Users: [Blank]  
 Ordering Physician: [Blank]  
 Test Performed by: Administrator Admin  
 Release Signature: Administrator Admin  
 Morphology/WHO 5th: [Blank]  
 % Normal Forms: [Blank]  
 Pinheads: [Blank]  
 Head Defects: [Blank]  
 Neck/Midpiece Defects: [Blank]  
 Tail Defects: [Blank]  
 Cytoplasmic Droplets: [Blank]

Biochemistry:  
 Neutral glucosidase: [Blank]  
 Fructose: [Blank]  
 Zinc: [Blank]

Other:  
 Agglutination: [Blank]  
 Agglutination: [Blank]  
 Round Cells: [Blank]  
 RBC: [Blank]  
 Viscosity (Live sperm/1000): [Blank]  
 Other: [Blank]

Comments:  
 The semen sample high viscosity was reduced by treatment with the Liquefaction Kit.

### Semen Analysis Report

Patient Information				Laboratory Information					
First Name	N.A.			Ordering Physician	N.A.				
Last Name	N.A.			Test Performed by	Administrator Administrator				
Patient ID	123			Release Signature	N.A.				
Birth Date	02/05/1980			Release Date	26/11/2012 12:28				
Abstinence (# of days)	3			SQA-V SN #	57				
Postvasectomy Test Results				Other Manual Tests					
SQA-V Automated Test	Test Results		Ref. Value		Manual Test	Test Results		Ref. Value	
		#	Laboratory	WHO 5th				Laboratory	WHO 5th
# Mobile Sperm	N.A.	#			Other	N.A.			
# Immobile Sperm	N.A.	#							
# Total Sperm	N.A.	#							
# Mobile Sperm/Vol	N.A.	M							
# Immot. Sperm/Vol	N.A.	M							
# Total Sperm/Vol	N.A.	M							
<b>Comments</b>									
The semen sample high viscosity was reduced by treatment with the Liquefaction Kit.									

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**Distribution:** All distributors