in vitro Diagnostic Medical Device Technical File

D-DIMER RAPID TEST CASSETTE (WHOLE BLOOD/PLASMA)

RAPG-DD-002

The signature below certifies that this document has been reviewed and accepted for its accuracy.

	Signature	Position	Date
Approved by		Quality Manager	12/06/2019

1 BACKGROUND

D-dimer (or D dimer) is a fibrin degradation product (or FDP), a small protein fragment present in the blood after a blood clot is degraded by fibrinolysis. It is so named because it contains two cross linked D fragments of the fibrin protein.[1.2]D-dimer concentration may be determined by a blood test to help diagnose thrombosis. Since its introduction in the 1990s, it has become an important test performed in patients with suspected thrombotic disorders. While a negative result practically rules out thrombosis, a positive result can indicate thrombosis but does not rule out other potential causes. Its main use, therefore, is to exclude thromboembolic disease where the probability is low. In addition, it is used in the diagnosis of the disorder Disseminated Intravascular Coagulopathy.[3.4]

The D-dimer Rapid Test Cassette (Whole Blood/Plasma) is a simple test that utilizes a combination of anti- D-dimer antibody coated particles and capture reagents to qualitatively detect D-dimer in whole blood or plasma. The minimum detection level is 500ng/ml.

1.1 Test Principle

The D-dimer Rapid Test Cassette (Whole Blood/Plasma) is a qualitative, membrane based immunoassay for the detection of D-dimer in whole blood or plasma. The membrane is pre-coated with specific capture antibodies in the test line regions of the test. During testing, the whole blood or plasma specimen reacts with the particle coated with specific antibodies. The mixture migrates upward on the membrane chromatographically by capillary action to react with specific capture antibodies on the membrane and generate a colored line. The presence of this colored line in the specific test line region indicates a positive result, while its absence indicates a negative result. To serve as a procedural control, a colored line will always appear in the control line region indicating that proper volume of specimen has been added and membrane wicking has occurred.

1.2 Illustrations

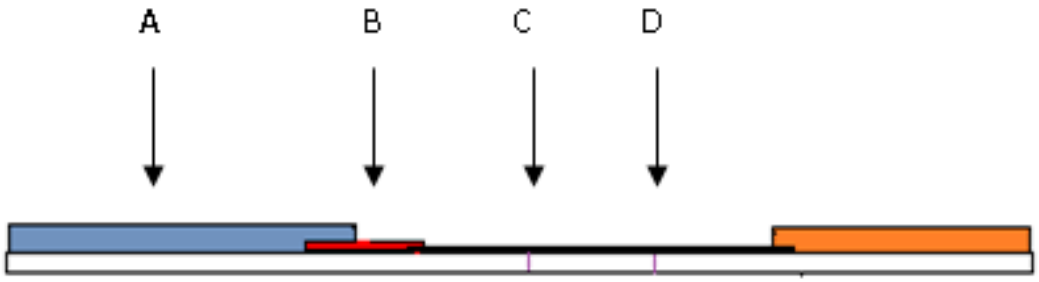

Figure 1: Test Principle

As shown in illustration above, the specimen (A) migrates via capillary action along the membrane to react with the colored conjugate (B). D-dimer antigen present in the specimen binds to the conjugate, forming a colored antibody-antigen complex. The mouse anti-D-dimer immobilized in the test zone of the membrane captures the test region (C). The formation of a

visible colored line in the test region indicates a positive result (C). The absence of a colored line in the test zones suggests a negative result. In the control zone of the membrane, immobilized reagents capture colored conjugate regardless of test specimen composition. The resulting visible colored band (D) confirms control line.

1.3 Precautions

- For professional *in vitro* diagnostic use only. Do not use after expiration date.
- Do not eat, drink or smoke in the area where the specimens or kits are handled.
- Do not use test if pouch is damaged.
- Handle all specimens as if they contain infectious agents. Observe established precautions against microbiological hazards throughout all procedures and follow the standard procedures for proper disposal of specimens.
- Wear protective clothing such as laboratory coats, disposable gloves and eye protection when specimens are assayed.
- The used test should be discarded according to local regulations.
- Humidity and temperature can adversely affect results.

1.4 Storage

Store the test at 2-30°C. Freezing must be avoided.

1.5 Stability

The D-dimer Rapid Test Cassette (Whole Blood/Plasma) is stable for 24 months from the date of production when stored properly in unopened aluminum foil pouches with desiccant.

1.6 Specimen Collection and Preparation

- The D-dimer Rapid Test Cassette (Whole Blood/Plasma) can be performed using whole blood (from venipuncture or fingerstick) or plasma specimen.
- To collect **Fingerstick Whole Blood specimens**:
- Wash the patient's hand with soap and warm water or clean with an alcohol swab. Allow to dry.
- Massage the hand without touching the puncture site by rubbing down the hand towards the fingertip of the middle or ring finger.
- Puncture the skin with a sterile lancet. Wipe away the first sign of blood.
- Gently rub the hand from wrist to palm to finger to form a rounded drop of blood over the puncture site.
- Add the Fingerstick Whole Blood specimen to the test by using **a capillary tube:**
- Touch the end of the capillary tube to the blood until filled to approximately 25μL. Avoid air bubbles.
- Place the bulb onto the top end of the capillary tube, then squeeze the bulb to dispense the whole blood to the specimen area of the test cassette.
- Separate plasma from blood as soon as possible to avoid hemolysis. Use only clear non-

hemolyzed specimens.

- Testing should be performed immediately after the specimens have been collected. Do not leave the specimens at room temperature for prolonged periods. Plasma specimens may be stored at 2-8°C for up to half day. For long term storage, specimens should be kept below -20°C. Whole blood collected by venipuncture should be stored at 2-8°C if the test is to be run within half day of collection. Do not freeze whole blood specimens. Whole blood collected by fingerstick should be tested immediately.
- Bring specimens to room temperature prior to testing. Frozen specimens must be completely thawed and mixed well prior to testing. Specimens should not be frozen and thawed repeatedly.
- If specimens are to be shipped, they should be packed in compliance with local regulations covering the transportation of etiologic agents.
- EDTA K2, Heparin sodium, Citrate sodium and Potassium Oxalate can be used as the anticoagulant for collecting the specimen.

1.7 Directions for Use

1. Bring the pouch to room temperature before opening it. Remove the test cassette from the sealed pouch and use it within one hour.
2. Place the cassette on a clean and level surface.

For **Plasma** specimen:

- Hold the dropper vertically and transfer**1 drop of plasma** (approximately **25**μL) to the specimen area, then add **2 drops of buffer** (approximately **80**μL), and start the timer. See illustration below.

For **Venipuncture Whole Blood** specimen:

- Hold the dropper vertically and transfer **1 drop of whole blood** (approximately **25**μL) to the specimen area, then **add 2 drops of buffer** (approximately **80**μL), and start the timer. See illustration below.

For **Fingerstick Whole Blood** specimen:

- To use a capillary tube: Fill the capillary tube **and transfer approximately 25 μL of fingerstick whole blood specimen** to the specimen area of test cassette, then **add 2 drops of buffer** (approximately **80**μL) and start the timer. See illustration below.

3. Wait for the colored line(s) to appear. Read results at 10 minutes. Do not interpret the result after 20 minutes.

Note: It is suggested not to use the buffer, beyond 6 months after opening the vial.

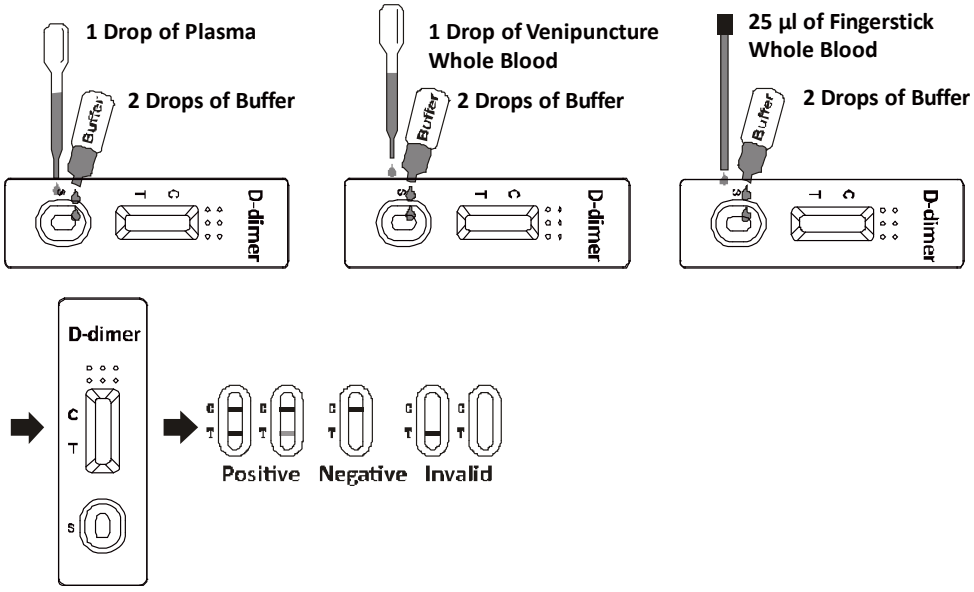

Figure 2: Interpretation of Results

1.8 Interpretation of Result

POSITIVE: * Two distinct colored lines appear. One color line should be in the control region (C) and another color line should be in the test region (T).

***NOTE:** The intensity of the color in the test line region (T) will vary depending on the concentration of D-dimer antigen present in the specimen. Therefore, any shade of red in the test region should be considered positive.

NEGATIVE: One color line appears in the control region (C). No apparent red or pink line appears in the test region (T).

INVALID: Control line fails to appear. Insufficient specimen volume or incorrect procedural techniques are the most likely reasons for control line failure. Review the procedure and repeat the test with a new test cassette. If the problem persists, discontinue using the test kit immediately and contact your local distributor

1.9 Quality Control

Internal procedural controls are included in the test. A colored line appearing in the control region (C) is an internal valid procedural control. It confirms sufficient specimen volume and correct procedural technique.

Control standards are not supplied with this kit; however, it is recommended that positive and negative controls be tested as a good laboratory practice to confirm the test procedure and to verify proper test performance.

1.10 Limitation

1. The D-dimer Rapid Test Cassette (Whole Blood/Plasma) is for *in vitro diagnostic use* only. This test should be used for the detection of D-dimer in whole blood or plasma specimens only. Neither the quantitative value nor the rate of increase in D-dimer can be determined by

this qualitative test.

2. The D-dimer Rapid Test Cassette (Whole Blood/ Plasma) will only indicate the qualitative level of D-dimer in the specimen and should not be used as the sole criteria for the diagnosis of Disseminated Intravascular Coagulopathy (DIC), Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE).
3. The D-dimer Rapid Test Cassette (Whole Blood/Plasma) cannot detect less than 500ng/mL D-dimer in specimens. A negative result at any time does not preclude the possibility of Disseminated Intravascular Coagulopathy (DIC), Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE).
4. False negative readings can occur if the sample is taken either too early after thrombus formation, if testing is delayed for several days or if the sample was take too later after the occurrence of thromboembolic infarction, because the D-dimer concentration may decrease to normal values after one week already. Additionally, a treatment with anti-coagulants prior sample collection can render the test negative because it prevents thrombus extension.[3,4]
5. As with all diagnostic tests, all results must be interpreted together with other clinical information available to the physician.E.g. use “Wells score” for DVT resp. PE, Ultrasound, quantitative laboratory D-Dimer results etc.[2]
6. There is a slight possibility that some whole blood specimens with very high viscosity or which have been stored for more than 2 days may not run properly on the test cassette. Repeat the test with a plasma specimen from the same patient using a new test cassette.
7. The hematocrit of the whole blood should be between 25% and 65%.

1.11 Description of Test Methods

1.11.1 General remarks

The Quality Control department performs testing according to written procedures. Testing equipment is checked prior to use and calibrated at scheduled frequencies.

1.11.2 Receiving inspection and control of raw materials

A sample batch of each raw material (chemicals, packaging and labeling) is inspected/tested (where applicable) for suitability and functionality. Primary packaging is inspected for correct dimensions, cleanliness and suitability. Only QC “APPROVED” raw material is employed for production.

1.12 Composition of Product

A) Mouse anti-D-dimer
B) Mouse IgG
C) Mouse anti-human RBC
D) Goat anti-mouse IgG
E) Adhesive plastic backing
F) Label pad
G) Absorbant pad
H) Sample pad

I) NC membrane
J) Desiccant (in pouch)
K) Pouch
L) Buffer
M) Sample dropper

1.13 Manufacturing Procedure

- Coat the gold/latex conjugated mouse anti-D-dimer antibody and mouse IgG on the label pad.
- Use the sprayer to dispense goat anti-mouse IgG and mouse anti-D-dimer antibody onto the membrane.
- Assemble the membrane, label pad, absorbent pad and sample pad on the plastic backing.
- Use the cutter to cut the plastic backing into strips of selected size.
- Test the strips according to the QC procedure and release the finished product.

2 PERFORMANCE CHARACTERISTICS

2.1 Sample Correlation

2.1.1. Method

The D-dimer Rapid Test Cassette (Whole Blood/Plasma) has been evaluated with specimens obtained from a population of symptomatic and asymptomatic individuals. Immunoturbidimetry (ITM) served as the reference method for the D-dimer Rapid Test Cassette (Whole Blood/Plasma). The specimen was considered positive if ITM results were positive. The specimen was also considered negative if the ITM results were negative. The lot of Biopanda D-dimer Rapid Test is DIM1702015-S.

Table- In house Clinical Study Result In Biopanda

Method		**ITM**		**Total Result**
D-dimer Rapid Test Cassette (Whole Blood/Plasma)	**Results**	Positive	Negative	
	Positive	312	6	318
	Negative	9	94	103
Total Result		321	100	421

Relative sensitivity: 97.2% (95%CI*: 94.7%~98.7%);
Relative specificity: 94.0% (95%CI*: 87.4%~97.8%);
Accuracy: 96.4% (95%CI*:94.2%~98.0%). *Confidence Intervals

Table- Clinical Study Result In NordLab

Method		**ITM (ACL-Top)**			
D-Dimer Rapid Test Cassette (Whole Blood/Plasma)	Results	0-250 ng/ml	250-500 ng/ml	500-2500 ng/ml	＞2500 ng/ml
	Positive	5	30	35	11
	Negative	104	207	4	0
Total Result		109	237	39	11
Accuracy:		95.4%	87.3%	89.7%	100%

Relative Sensitivity: 92.0% (95%CI*: 80.8%-97.8%) *Confidence Interval
Relative Specificity: 89.9% (95%CI*: 86.2%-92.9%)
Accuracy: 90.2% (95%CI*: 86.8%-92.9%)

2.1.2. Conclusion

Clinical test has been conducted on altogether 421 in house D-dimer clinical specimens. The Biopanda kits were parallel comparison studied with ITM, the total conformity rate between Biopanda D-dimer Rapid Test Cassette and D-dimer ITM is 96.4%, this indicate that the two has got high conformity in the respect of D-dimer Rapid test.

Clinical test has been conducted on altogether 396 outside D-dimer clinical specimens. The Biopanda kits were parallel comparison studied with ITM, the total conformity rate between Biopanda D-dimer Rapid Test Cassette and D-dimer ITM is 90.2%, this indicate that the two has got high conformity in the respect of D-dimer Rapid test.

2.2 Detection Limitation Study

2.2.1. Method

A very high concentration of D-dimer recombine antigen diluted with 0.5% BSA-PBS into 0.5mg/ml, 0.1mg/ml, 50μg/ml, 10μg/ml, 5μg/ml, 1μg/ml, 500ng/ml, 250ng/ml, 100ng/ml and 50ng/ml. The 500ng/ml as the design cut-off value. Test the specimen above with 3 lots of D-dimer Rapid Test Cassette according to package insert.

Table: Detection Limitation Study Result

Conc.	Results								
	DDM16120001-T			DDM16120002-T			DDM16120003-T		
0.5mg/ml	+	+	+	+	+	+	+	+	+
0.1mg/ml	+	+	+	+	+	+	+	+	+
50μg/ml	+	+	+	+	+	+	+	+	+
10μg/ml	+	+	+	+	+	+	+	+	+
5μg/ml	+	+	+	+	+	+	+	+	+
1μg/ml	+	+	+	+	+	+	+	+	+
500ng/ml	+	+	+	+	+	+	+	+	+
250ng/ml	-	-	-	-	-	-	-	-	-
100ng/ml	-	-	-	-	-	-	-	-	-
50ng/ml	-	-	-	-	-	-	-	-	-

Note: “+” mean positive, “-” mean negative.

2.2.2. Conclusion

The D-dimer Rapid Test Cassette (Whole Blood/Plasma) could detect out as low as 500ng/ml D-dimer antigen.

2.3 Interfering Substances

2.3.1. Method

Analytes were spiked into negative whole blood and plasma pools (ITM confirmed) and middle positive whole blood and plasma specimens (ITM confirmed) at the concentrations listed. The specimens were tested in triplicate with visual interpretations occurring at 10 and 20 minutes (negative result read at 20 minutes, positive result read at 10 minutes) after specimen application. Results are presented in Table below.

Table: Interfering Substance

Analytes	Conc.	DDM16120001-T											
		Whole blood						Plasma					
		Negative			Middle			Negative			Middle		
Ascorbic acid	20mg/dl	-*	-	-	+**	+	+	-	-	-	+	+	+
Hemoglobin	1000mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Acetylsalicylic acid	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Gentisic acid	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Oxalic acid	600mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Triglycerides	1600mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Bilirubin	1000mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
acetaminophen	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Creatin	200mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Cholesterol	800mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Albumin	10500mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Caffeine	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Analytes	Conc.	DDM16120002-T											
		Whole blood						Plasma					
		Negative			Middle			Negative			Middle		
Ascorbic acid	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Hemoglobin	1000mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Acetylsalicylic acid	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Gentisic acid	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Oxalic acid	600mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Triglycerides	1600mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Bilirubin	1000mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
acetaminophen	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Creatin	200mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Cholesterol	800mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Albumin	10500mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Caffeine	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Analytes	Conc.	DDM16120003-T											
		Whole blood						Plasma					

		Negative			Middle			Negative			Middle		
Ascorbic acid	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Hemoglobin	1000mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Acetylsalicylic acid	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Gentisic acid	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Oxalic acid	600mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Triglycerides	1600mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Bilirubin	1000mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
acetaminophen	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Creatin	200mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Cholesterol	800mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Albumin	10500mg/dl	-	-	-	+	+	+	-	-	-	+	+	+
Caffeine	20mg/dl	-	-	-	+	+	+	-	-	-	+	+	+

Note: “+” mean positive, “-” mean negative

2.3.2. Conclusion

No substances showed any interference with the test. There were no differences observed between the results at 10 minutes.

2.4 Cross Reactivity

2.4.1. Method

HBsAg, Anti-Syphilis, Anti-HCV, Anti-HIV, anti-H.pylori, Rheumatoid factor (RF), anti-CMV IgG, anti-Rubella IgG and anti-Toxoplasmosis IgG positive specimens as confirmed by ELISA or other method were tested with the D-dimer Rapid Test Cassette occurred at 10 minutes and 20 minutes after specimen application**.** Results were presented in Table below.

Table: Cross Reactivity

RAPG-DD-002 / **Specimens**		**DDM16120001-T**		**DDM16120002-T**		**DDM16120003-T**	
		10min	20min	10min	20min	10min	20min
3 HBsAg positive samples	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
3 Anti-HCV positive samples	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
3 Anti-HIV Positive Samples	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
3 Anti-H.pylori Positive Samples	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
3 Anti-Syphilis positive samples	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
3 RF Positive Samples	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
3 CMV IgG	1	-	-	-	-	-	-

Positive Samples	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
3 Rubella IgG Positive Samples	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
3 Toxo IgG positive samples	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-

Note: "-" mean negative

2.4.2. Conclusion

There is no cross-reaction with the substance above at 10 minutes and 20 minutes.

2.5 Hematocrit flex

2.5.1. Method

Whole blood standards were prepared with type ”O” red cell and D-dimer standards at the hematocrit 25%, 40%, 50% and 65%. D-dimer 500ng/mL positive, D-dimer 1000ng/mL positive, D-dimer 1500ng/mL positive and negative standard whole blood samples were performed individually at different hematocrit. Visual interpretations were recorded at 10 and 20 minutes after specimen application

Table: Hematocrit Flex

Sample / Hematocrit	1500ng/mL			1000ng/mL			500ng/mL			Negative		
25%	+	+	+	+	+	+	+	+	+	-	-	-
40%	+	+	+	+	+	+	+	+	+	-	-	-
50%	+	+	+	+	+	+	+	+	+	-	-	-
65%	+	+	+	+	+	+	+	+	+	-	-	-

Note: “+” mean positive, “-” mean negative

Flowing and background: Four different hematocrit levels showed good flow characteristics and the control line appeared within 3mins. There was no background problem at read time even with the high hematocrit level.

2.5.2. Conclusion

There were no performance effects seen with the hematocrit levels testing. The D-dimer Rapid Test showed good flow and no background problem between 25% and 65% hematocrit.

2.6 Anticoagulant Study

2.6.1. Method

Collect 10 volunteers' blood with EDTA-K2, Heparin sodium, Citrate sodium and Oxalate potassium anticoagulant tube. Separate the whole blood and plasma from the specimen in anticoagulant tube, then spiked the D-dimer recombine antigen into the plasma and whole blood at the concentration of 1500ng/ml and 500ng/ml, tested the 10 negative and positive spiked specimen with D-dimer Rapid Test Cassette (WB/Plasma). The operation method refers to the package insert.

Table: Anticoagulant Study

EDTA-K2 Anticoagulant Tube						
Specimen No.	**Lot 1: DDM16120001-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	
	Plasma	**Whole Blood**	**Plasma**	**Whole Blood**	**Plasma**	**Whole Blood**
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Specimen No.	**Lot 2: DDM16120002-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	
	Plasma	**Whole Blood**	**Plasma**	**Whole Blood**	**Plasma**	**Whole Blood**
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Specimen No.	**Lot 3: DDM16120003-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	
	Plasma	**Whole**	**Plasma**	**Whole**	**Plasma**	**Whole**

		Blood		Blood		Blood
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Heparin Sodium Anticoagulant Tube						
Specimen No.	**Lot 1: DDM16120001-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	
	Plasma	**Whole Blood**	**Plasma**	**Whole Blood**	**Plasma**	**Whole Blood**
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Specimen No.	**Lot 2: DDM16120002-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	
	Plasma	**Whole Blood**	**Plasma**	**Whole Blood**	**Plasma**	**Whole Blood**
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Specimen No.	**Lot 3: DDM16120003-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	

	Plasma	Whole Blood	Plasma	Whole Blood	Plasma	Whole Blood
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Citrate Sodium Anticoagulant Tube						
Specimen No.	**Lot 1: DDM16120001-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	
	Plasma	**Whole Blood**	**Plasma**	**Whole Blood**	**Plasma**	**Whole Blood**
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Specimen No.	**Lot 2: DDM16120002-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	
	Plasma	**Whole Blood**	**Plasma**	**Whole Blood**	**Plasma**	**Whole Blood**
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Specimen	**Lot 3: DDM16120003-T**					

No.	Negative		1500ng/ml Spiked		500ng/ml Spiked	
	Plasma	Whole Blood	Plasma	Whole Blood	Plasma	Whole Blood
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Oxalate Potassium Tube						
Specimen No.	**Lot 1: DDM16120001-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	
	Plasma	**Whole Blood**	**Plasma**	**Whole Blood**	**Plasma**	**Whole Blood**
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+
Specimen No.	**Lot 2: DDM16120002-T**					
	Negative		**1500ng/ml Spiked**		**500ng/ml Spiked**	
	Plasma	**Whole Blood**	**Plasma**	**Whole Blood**	**Plasma**	**Whole Blood**
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+

Specimen No.	Lot 3: DDM16120003-T					
	Negative		1500ng/ml Spiked		500ng/ml Spiked	
	Plasma	Whole Blood	Plasma	Whole Blood	Plasma	Whole Blood
1	-	-	+	+	+	+
2	-	-	+	+	+	+
3	-	-	+	+	+	+
4	-	-	+	+	+	+
5	-	-	+	+	+	+
6	-	-	+	+	+	+
7	-	-	+	+	+	+
8	-	-	+	+	+	+
9	-	-	+	+	+	+
10	-	-	+	+	+	+

Note: “+” mean positive, “-” mean negative

2.6.2. Conclusion

The result showed no difference among different anticoagulant tube to collect whole blood specimens and plasma specimen in this study.

2.7 Dose Hook Effect

2.7.1. Method

A very high concentration of D-dimer recombine antigen diluted with 0.5% BSA-PBS into 0.5mg/ml, 0.1mg/ml, 50μg/ml, 10μg/ml, 5μg/ml, 1μg/ml, 500ng/ml, 250ng/ml, 100ng/ml and 50ng/ml. Test the specimen above with 3 lots of D-dimer Rapid Test Cassette according to package insert.

Table: Dose Hook Effect

Conc.	Results								
	DDM16120001-T			DDM16120002-T			DDM16120003-T		
0.5mg/ml	+	+	+	+	+	+	+	+	+
0.1mg/ml	+	+	+	+	+	+	+	+	+
50μg/ml	+	+	+	+	+	+	+	+	+
10μg/ml	+	+	+	+	+	+	+	+	+
5μg/ml	+	+	+	+	+	+	+	+	+
1μg/ml	+	+	+	+	+	+	+	+	+
500ng/ml	+	+	+	+	+	+	+	+	+
250ng/ml	-	-	-	-	-	-	-	-	-
100ng/ml	-	-	-	-	-	-	-	-	-
50ng/ml	-	-	-	-	-	-	-	-	-

Note: “+” mean positive, “-” mean negative.

2.7.2. Conclusion

There was no dose hook effect of D-dimer Rapid Test Cassette (Whole Blood/Plasma) when tested the D-dimer antigen at the concentration from 500ng/ml to 0.5mg/ml.

2.8 Negative Conversion Study

2.8.1. Method

10 clinically proven negative samples were tested in duplicate, in test with and without temperature stressing (storing tests for two days at 4°C, 25°C, 45°C and -20°C prior to running tests) to evaluate possible conversion to positive results. The operators read the results at 10 and 20 minutes after sample addition.

Table: Negative Conversion Study

DDM16120001-T		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10
4°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
25°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
45°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
-20°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
DDM16120002-T		-	-	-	-	-	-	-	-	-	-
4°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
25°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
45°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
-20°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
DDM16120003-T		-	-	-	-	-	-	-	-	-	-
4°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
25°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
45°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-
-20°C	10’	-	-	-	-	-	-	-	-	-	-
	20’	-	-	-	-	-	-	-	-	-	-

2.8.2. Method

The results were consistent between tests with and without temperatures stress. In this experiment, none of the samples tested converted from negative to positive results in the 10-20 minutes read time.

2.9 Between Day Reproducibility

2.9.1. Method

D-dimer 0ng/ml, D-dimer 500ng/ml, D-dimer 1000ng/ml, D-dimer 1500ng/ml and D-dimer 3000ng/ml positive standard samples were run individually on ten separate days using the same lot of D-dimer rapid test cassettes. Results were rated visually as positive or negative at 10 minutes and 20 minutes after specimen application. Results are presented in table below.

Table: Between Day Results

Lot	**Specimens**	**Day 1 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 2 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 3 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 4 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 5 Result**									

		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 6 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 7 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 8 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 9 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 10 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	

		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+

Note: "+" mean positive, "-" mean negative

2.9.2. Conclusion

100% of actual results were consistent with expected results. No distinct difference was detected in intra lots.

2.10 Between Lot Reproducibility

2.10.1. Method

D-dimer 0ng/ml, D-dimer 500ng/mL, D-dimer 1000ng/ml, D-dimer 1500ng/ml and D-dimer 3000ng/ml positive standard samples were run in replicates of 3 in three separate lots of product. Results were rated as positive or negative at 10 and 20 minutes after specimen application. The results are present in table below.

Table: Between Lot Reproducibility Results

Lot	Specimens	Day 1 Result									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
DDM16120002-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
DDM16120003-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 2 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min
DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
DDM16120002-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
DDM16120003-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
Lot	**Specimens**	**Day 3 Result**									
		0ng/ml		500ng/mL		1000ng/mL		1500g/mL		3000ng/ml	
		10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min	10 min	20 min

DDM16120001-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
DDM16120002-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+
DDM16120003-T	1	-	-	+	+	+	+	+	+	+	+
	2	-	-	+	+	+	+	+	+	+	+
	3	-	-	+	+	+	+	+	+	+	+

Note: “-” mean negative result, “+” mean positive result

2.10.2. Conclusion

Test results were consistent between the 3 lots of D-dimer Rapid Test Cassette.

2.11 Reading Time Flex

2.11.1. Method

Negative, 500ng/mL D-dimer positive, 1000ng/mL D-dimer positive and 1500ng/mL D-dimer positive standards have been tested according to the directions for use in replicates of 3. The test was rated as positive or negative at 3, 5, 10, 15, 20, 30minutes, 1 hour, 2 hours, 8 hours, and 24 hours.

Table: Reading Time Flex

Time	Lot 1: DDM16120001-T											
	Negative			500ng/mL			1000ng/mL			1500ng/mL		
3min	-	-	-	-	-	-	-	-	-	-	-	-
5min	-	-	-	-	+	+	+	+	+	+	+	+
10min	-	-	-	+	+	+	+	+	+	+	+	+
15min	-	-	-	+	+	+	+	+	+	+	+	+
20min	-	-	-	+	+	+	+	+	+	+	+	+
30min	-	-	-	+	+	+	+	+	+	+	+	+
1 h	+	-	+	+	+	+	+	+	+	+	+	+
2hs	+	+	+	+	+	+	+	+	+	+	+	+
8hs	+	+	+	+	+	+	+	+	+	+	+	+
24hs	+	+	+	+	+	+	+	+	+	+	+	+
Time	Lot 2: DDM16120002-T											
	Negative			500ng/mL			1000ng/mL			1500ng/mL		
3min	-	-	-	-	-	-	-	-	-	-	-	-
5min	-	-	-	-	+	-	+	+	+	+	+	+
10min	-	-	-	+	+	+	+	+	+	+	+	+
15min	-	-	-	+	+	+	+	+	+	+	+	+
20min	-	-	-	+	+	+	+	+	+	+	+	+
30min	-	-	-	+	+	+	+	+	+	+	+	+
1 h	-	-	+	+	+	+	+	+	+	+	+	+
2hs	+	+	+	+	+	+	+	+	+	+	+	+
8hs	+	+	+	+	+	+	+	+	+	+	+	+
24hs	+	+	+	+	+	+	+	+	+	+	+	+
Time	Lot 3: DDM16120003-T											
	Negative			500ng/mL			1000ng/mL			1500ng/mL		
3min	-	-	-	-	-	-	-	-	-	-	-	-
5min	-	-	-	+	+	-	+	+	+	+	+	+
10min	-	-	-	+	+	+	+	+	+	+	+	+
15min	-	-	-	+	+	+	+	+	+	+	+	+
20min	-	-	-	+	+	+	+	+	+	+	+	+
30min	-	-	-	+	+	+	+	+	+	+	+	+
1 h	-	+	+	+	+	+	+	+	+	+	+	+

2hs	+	+	+	+	+	+	+	+	+	+	+	+
8hs	+	+	+	+	+	+	+	+	+	+	+	+
24hs	+	+	+	+	+	+	+	+	+	+	+	+

Note: “+” mean positive result, “-” mean negative result

2.11.2. Conclusion

This study demonstrated the ability of the assay to give correct results with the prescribed read time of 10-20 minutes. For the samples tested, the result remained consistent within a 30 minutes period.

2.12 Specimen Volume Flex Study

2.12.1. Method

Negative plasma, negative whole blood, 500ng/mL D-dimer positive spiked plasma and 500ng/mL D-dimer positive spiked whole blood specimen tested with D-dimer rapid test with the following operation method, read the results at 10 minutes and 20 minutes, a suitable specimen volume should be validated in this study.

Test cassette:

Method A- 25µl specimen+1 drop of buffer

Method B- 25µl specimen+2 drops of buffer

Method C- 50µl specimen+1 drops of buffer

Method D- 50µl specimen+2 drops of buffer

Table: Volume Flex Study

Method	**Time (Mins)**	**Lot 1: DDM16120001-T**					
		D-dimer negative					
		Plasma			**Whole Blood**		
A	10	-	-	-	-	-	-
	20	+	+	+	+	+	+
B	10	-	-	-	-	-	-
	20	-	-	-	-	-	-
C	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
D	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
Method	**Time (Mins)**	**Lot 1: DDM16120002-T**					
		D-dimer negative					
		Plasma			**Whole Blood**		
A	10	-	-	-	-	-	-
	20	+	+	+	+	+	+
B	10	-	-	-	-	-	-
	20	-	-	-	-	-	-
C	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
D	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
Method	**Time (Mins)**	**Lot 1: DDM16120003-T**					
		D-dimer negative					
		Plasma			**Whole Blood**		
A	10	-	-	-	-	-	-
	20	+	+	+	+	+	+
B	10	-	-	-	-	-	-
	20	-	-	-	-	-	-

C	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
D	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
Method	**Time (Mins)**	**Lot 1: DDM16120001-T**					
		D-dimer 500ng/ml					
		Plasma			**Whole Blood**		
A	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
B	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
C	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
D	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
Method	**Time (Mins)**	**Lot 1: DDM16120002-T**					
		D-dimer 500ng/ml					
		Plasma			**Whole Blood**		
A	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
B	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
C	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
D	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
Method	**Time (Mins)**	**Lot 1: DDM16120003-T**					
		D-dimer 500ng/ml					
		Plasma			**Whole Blood**		
A	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
B	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
C	10	+	+	+	+	+	+
	20	+	+	+	+	+	+
D	10	+	+	+	+	+	+
	20	+	+	+	+	+	+

Note: “+” mean positive, “-” mean negative

2.12.2. Conclusion

This study demonstrated the ability of the assay to give correct results with the prescribed specimen volume as following:

Plasma/whole blood: 25µl specimen + 2 drops of buffer.

2.13 Open Pouch Stability Study

2.13.1. Method

D-dimer standards including negative specimen, 500ng/ml D-dimer positive, 1000ng/ml D-dimer positive and 1500ng/ml D-dimer positive were run in triplicate using the D-dimer rapid tests which were opened pouch after 10 minutes, 20 minutes, 30 minutes, 1 hour, 1.5 hours and 2 hours at room temperature. All results were read as positive or negative at 10 and 20 minutes after sample application.

Table: Open Pouch Stability

Standard	Time after Open Pouch (Minutes)	RAPG-DD-002								
		Lot 1: DDM16120001-T			Lot 2: DDM16120002-T			Lot 3: DDM16120003-T		
Negative	10	-	-	-	-	-	-	-	-	-
	20	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-
	60	-	-	-	-	-	-	-	-	-
	90	-	-	-	-	-	-	-	-	-
	120	-	-	-	-	-	-	-	-	-
D-dimer 500ng/ml	10	+	+	+	+	+	+	+	+	+
	20	+	+	+	+	+	+	+	+	+
	30	+	+	+	+	+	+	+	+	+
	60	+	+	+	+	+	+	+	+	+
	90	-	+	-	+	-	+	-	+	-
	120	-	-	+	-	+	-	-	-	-
D-dimer 1000ng/ml	10	+	+	+	+	+	+	+	+	+
	20	+	+	+	+	+	+	+	+	+
	30	+	+	+	+	+	+	+	+	+
	60	+	+	+	+	+	+	+	+	+
	90	+	+	+	+	+	+	+	+	+
	120	+	+	+	+	+	+	+	+	+
D-dimer 1500ng/ml	10	+	+	+	+	+	+	+	+	+
	20	+	+	+	+	+	+	+	+	+
	30	+	+	+	+	+	+	+	+	+
	60	+	+	+	+	+	+	+	+	+
	90	+	+	+	+	+	+	+	+	+
	120	+	+	+	+	+	+	+	+	+

Note: "+" mean positive, "-" mean negative

2.13.2. Conclusion

Results above indicated best results of D-dimer Rapid Test will be got within 1 hr after opening the pouch.

2.14 Accelerated Stability

2.14.1. Method

Accelerated Stability of the D-dimer Rapid Test (Whole Blood/Plasma) was evaluated using samples from three different batches. These were placed in an incubator with the temperature calibrated at 45°C and 55°C. Relative humidity (RH) calibrated at about 60%. A series of stability tests were performed at 0, 7, 14, 21, 28, 35, 42, 56, 77, 91, 105, 112, 119, 126 and 133 days for 45°C. About 55°C, some performance study would be tested at 0, 7, 14, 21, 28, 35, 42, 49, 56 and 60 days according to Arrhenius Plot. See Table in below. Test cassettes were assayed using negative, 500ng/ml, 1000ng/ml and 1500ng/ml positive standard sample. Testing at each specific time interval consisted of 3 replicates for each specimen. The tests were performed according to the package insert. Results are presented in Table below.

Arrhenius Formula:

In K=-Ea/RT + In A

"K" mean Rate constant

"A" mean Arrhenius constant

"Ea" mean Activation energy

"R" mean Gas constant

"T" mean Temperature in Kelvin

Table: Timeline for Accelerate Stability Study

Day Temp.	0 day	7 days	14 days	21 days	28 days	35 days	42 days	49 days	56 days	60 days	77 days	91 days	105 days	112 days	119 days	126 days	133 days
45°C.	√	√	√	√	√	√	√		√		√	√	√	√	√	√	√
55°C.	√	√	√	√	√	√	√	√	√	√							

Table: 45°C Accelerated Stability Summary

Day	Specimen	RAPG-DD-002								
		DDM16120001-T			DDM16120002-T			DDM16120003-T		
0	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
7	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
14	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+

	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
21	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
28	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
35	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
42	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
56	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
77	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
91	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
105	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
112	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
119	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+

126	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
133	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+

Note: "+" mean positive, "-" mean negative

Table: 55°C Accelerated Stability Summary

Day	Specimen	RAPG-DD-002								
		DDM16120001-T			DDM16120002-T			DDM16120003-T		
0	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
7	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
14	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
21	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
28	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
35	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
42	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+

49	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
56	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+
60	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml	+	+	+	+	+	+	+	+	+
	1000ng/ml	+	+	+	+	+	+	+	+	+
	1500ng/ml	+	+	+	+	+	+	+	+	+

Note: "+" mean positive, "-" mean negative

2.14.2. Conclusion

D-dimer Rapid Test Cassette (Whole Blood/Plasma) is stable at 45°C for 133 days and at 55°C for 60 days. These data were plotted on an Arrhenius Plot and the shelf life of this product was determined to be at least 39 months from the date of manufacture.

2.15 Real-time Stability Study

2.15.1. Materials

Cassette

Lot 1: DDM16120001-T

Lot 2: DDM16120002-T

Lot 3: DDM16120003-T

2.15.2. Method

A real-time stability study of transfer lots will be run at the recommended storage temperatures to verify product stability over length of storage time. Tests will be assayed according to QC test procedure at designated time points using seven controls: negative, 500ng/ml positive, 1000ng/ml positive and 1500ng/ml positive. Run triplicate per control and read the result at 10 or 20 minutes (negative standard sample was read at 20 minutes and the other were read at 10 minutes).

Following table illustrate the designated time points when the stability test will be performed.

Storage Temp.	Day	Month	Month	Month	Month	Month	Month	Month	Month	Month
	0	3	6	9	12	15	18	21	24	27
2~8℃	×	×	×	×	×	×	×	×	×	×
30±3℃	×	×	×	×	×	×	×	×	×	×

2.15.3. Results

Store at 2~8°C

Months	**Specimens**	**Lot No.**								
		Lot1: DDM16120001-T			**Lot2: DDM16120002-T**			**Lot 3: DDM16120003-T**		
0	Negative	**-***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	500ng/ml Pos.	**+****	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**
	1000ng/ml Pos.	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**
	1500ng/ml Pos.	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**
3	Negative	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	500ng/ml Pos.	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**
	1000ng/ml Pos.	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**
	1500ng/ml Pos.	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**	**+**
6	Negative	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
9	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
12	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
15	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+

18	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
21	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
24	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
27	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+

"*" means negative result, "**" means positive result

Stored at 30±3°C

Months	Specimens	Lot No.								
		Lot1: DDM16120001-T			Lot2: DDM16120002-T			Lot 3: DDM16120003-T		
0	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
3	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
6	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+

	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
9	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
12	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
15	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
18	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+

	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
21	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
24	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+
27	Negative	-	-	-	-	-	-	-	-	-
	500ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1000ng/ml Pos.	+	+	+	+	+	+	+	+	+
	1500ng/ml Pos.	+	+	+	+	+	+	+	+	+

2.15.4. Conclusion

From the data above, the real time stability for D-dimer Rapid Test was stable at 27 months at both 2-8℃ and 30±3℃.

2.16 Simulated Shipping Stability Study

2.16.1. Materials

Lot 1: DDM16120001-T

Lot 2: DDM16120002-T

Lot 3: DDM16120003-T

2.16.2. Method

a. 3XFT/25℃:

Perform 3 freeze (-20℃±10℃)/thaw (15℃-30℃) cycles and at the last thaw, perform the QC testing.

b. 2 Days @ 55℃ /25 ℃:

Place test dipstick and test cassettes in a 55℃ oven for 2 days and then perform the QC testing.

Following table illustrates the time points when the stability tests will be performed.

Temperature	Days										Months			
	0*	7	14	21	28	35	42	56	77	84	3	4	5	6
3FT/25 ℃	X	X			X			X						X**
2 Days @ 55 ℃ /25 ℃	X	X			X			X						X**

* DAY 0: Run 10 tests with each control.

** Continue testing every 3 months until the 27th Month.

c. Humidity study:

Place the pouched devices in the 30%, 60% and >=80% relative humidity environments for 48

hours. After 48 hours, perform QC testing on the devices exposed under the 3 different relative humidity conditions.

2.16.3. Results

Table 1: D-dimer Rapid Test (Whole blood/Plasma) Results for Simulated shipping study of 3XFT/25℃

D-dimer Rapid Test Cassette (Whole blood/Plasma)

Day/ month	Specimen	Lot		
		DDM16120001-T	DDM16120002-T	DDM16120003-T
0 Day	Negative	10-**	10-	10-
	500ng/ml Pos.	10+*	10+	10+
	1000ng/ml Pos.	10+	10+	10+
	1500ng/ml Pos.	10+	10+	10+
7 Days	Negative	5-****	5-	5-
	500ng/ml Pos.	5+***	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
28 Days	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
56 Days	Negative	5-	5-	5-

	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
6 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
9 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
12 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
15 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+

18 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
21 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
24 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
27 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+

Note: *mean ten results were positive

**mean ten results were negative

*** mean five results were positive

**** mean five results were negative

2.16.4. Conclusion

The D-dimer Rapid Test (Whole blood/Plasma) was stable for Simulated shipping study of 3XFT/25℃ for 27months.

Table 2: D-dimer Rapid Test (Whole blood/Plasma) Results for

Simulated shipping study of 2 Days @55℃ /25℃

D-dimer Rapid Test Cassette (Whole blood/Plasma)

Day/ month	Specimen	Lot		
		DDM16120001-T	DDM16120002-T	DDM16120003-T
0 Day	Negative	10-	10-	10-
	500ng/ml Pos.	10+	10+	10+
	1000ng/ml Pos.	10+	10+	10+
	1500ng/ml Pos.	10+	10+	10+
7 Days	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
28 Days	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+

	1500ng/ml Pos.	5+	5+	5+
56 Days	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
6 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
9 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
12 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
15 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+

	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
18 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
21 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
24 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+
27 months	Negative	5-	5-	5-
	500ng/ml Pos.	5+	5+	5+
	1000ng/ml Pos.	5+	5+	5+
	1500ng/ml Pos.	5+	5+	5+

2.16.5. Conclusion

The D-dimer Rapid Test (Whole blood/Plasma) was stable for Simulated shipping study of 2 Days @55℃/25℃ for 27months.

Table 3: D-dimer Rapid Test (Whole blood/Plasma) Results for Humidity study of 30%

D-dimer Rapid Test Cassette (Whole blood/Plasma)

Specimen	Lot		
	DDM16120001-T	DDM16120002-T	DDM16120003-T
Negative	5-	5-	5-
500ng/ml Pos.	5+	5+	5+
1000ng/ml Pos.	5+	5+	5+
1500ng/ml Pos.	5+	5+	5+

Table 4: D-dimer Rapid Test (Whole blood/Plasma) Results for Humidity study of 60%

D-dimer Rapid Test Cassette (Whole blood/Plasma)

Specimen	Lot		
	DDM16120001-T	DDM16120002-T	DDM16120003-T
Negative	5-	5-	5-
500ng/ml Pos.	5+	5+	5+
1000ng/ml Pos.	5+	5+	5+
1500ng/ml Pos.	5+	5+	5+

Table 5: D-dimer Rapid Test (Whole blood/Plasma) Results for Humidity study of >=80%

D-dimer Rapid Test Cassette (Whole blood/Plasma)

Specimen	Lot		
	DDM16120001-T	DDM16120002-T	DDM16120003-T
Negative	5-	5-	5-
500ng/ml Pos.	5+	5+	5+
1000ng/ml Pos.	5+	5+	5+
1500ng/ml Pos.	5+	5+	5+

2.16.6. Conclusion

The D-dimer Rapid Test (Whole blood/Plasma) product can yield correct results when tested with the products stored from 30% to >=80%relative humidity conditions. Therefore, it can tolerate a wide fluctuation of relative humidity conditions.

3 RISK ASSESSMENT

Process step / component	Cause and effect of failure	S	O	D	RPN before	Preventative measure(s)	S	O	D	RPN after
Storage of kit outside of prescribed environmental conditions	Degradation of the components of the kits due to storage at incorrect temperature may lead to erroneous test results. Such degradation is not immediately obvious.	3	4	7	**84**	Label on the kit box as well as product instructions should clearly state the storage conditions. Lack of control line will indicate if test has degraded due to poor storage.	3	2	3	**18**
Use of kit past expiration date	Degradation of the components of the kit past their expiration date may lead to erroneous test results.	3	3	3	**27**	Label on the kit box and components clearly stating expiration date.	3	2	2	**12**
Reuse of kit	Test cassettes must not be reused.	5	3	2	**30**	"Do not re-use" symbol on kit box.	5	2	2	**20**
Use by unskilled operator	The kit is not for self testing and must be used by a trained laboratory technician. Misuse can cause erroneous test results.	5	3	3	**45**	Include a statement "For use by healthcare professionals"	5	2	3	**30**
Mislabelling of expiration date	Misinformation of user. User may dispose of unexpired test kit causing wastage, or may use an expired test kit causing erroneous test results.	6	3	5	**90**	Carefully inspect label and cross-reference against production records to ensure printed expiry date is 12 months from date of manufacture.	6	2	1	**12**
Mislabelling of lot numbers	Misinformation of user. Traceability not ensured.	2	3	5	**30**	Carefully inspect labels and cross-reference against production records.	2	2	1	**4**
Leakage of reagent bottles	Insufficient material to carry out test. Destruction of outer package.	5	3	5	**75**	Ensure all bottle lids are tight. Check each bottle for leaks by inverting and gently squeezing.	5	1	1	**5**
Foil pouch damaged	Humidity affects the test cassettes and causes degradation.	5	2	4	**40**	Inspect foil pouches and ensure vacuum seal integrity. Include a desiccant packet.	5	1	1	**5**
Antibody not properly coated on membrane	Caused by incorrect use of coating buffer, or insufficient coating time. Low or no reading. Difficult to	6	3	8	**144**	Ensure correct dilution of antibody is made according to manufacturing method. Ensure correct coating buffer is used. Assemble	6	1	2	**12**

Process step / component	Cause and effect of failure	S	O	D	RPN before	Preventative measure(s)	S	O	D	RPN after
	visually confirm strips are properly coated.					membrane into cassettes and seal the cassettes in a foil pouch with desiccant under vacuum. Carry out QC on membrane and ensure they meet batch release criteria.				
Use of incorrect antigen or antibody	Low or no reading and the test would not work.	5	3	4	**60**	Carefully check labels of antibody or antigen stock. Carry out QC to ensure batch release criteria are met.	5	2	1	**10**
Result read too early	Coloured lines on test strip may not be fully developed, could give misleading reading.	6	5	3	**90**	Ensure instructions clearly state to allow 10 minutes before reading results.	6	2	3	**36**
Result read too late	Coloured lines on test strip may begin to fade, giving misleading reading.	6	5	3	**90**	Ensure instructions clearly state not to read results after 20 minutes.	6	2	3	**36**

4 DECLARATION OF CONFORMITY

Declaration of Conformity

according to Directive 98/79/EC, on *in vitro* diagnostic medical devices

Maker: (Name, Address)	Biopanda Reagents Ltd				
Production address	Unit 14 Carrowreagh Business Park, Carrowreagh Road, Belfast BT16 1QQ United Kingdom.				
Medical device	Description	:	D-dimer Rapid Test (RAPG-DD-001)		
	Classification of products according to directive	:	Others		
	Batch/serial No. type, production term (if applicable)	:			
Applicable coordination standards：	EN ISO 14971:2012 ISO 9001:2008EN 980:2008 EN ISO 18113:2011 EN 13612:2002 EN 13640:2002 EN 1041:2008 SO 15223-1:2016				

Signatory representative declares herein the above mentioned device meets the basic requirements of the European Parliament and the Council's *in vitro* diagnostic medical devices directive: 98/79/EC Annex III.

This declaration of conformity is based on European Parliament and the Council's 98/79/EC directive Annex III.

Managing Director:

12/06/2019 Han Yan

(place and date of issue) (name and signature or equivalent marking of authorised person)

5 BIBLIOGRAPHY

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