



Pre-Analytic Sample Processing
Stout C, et al., 2015

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DRUCKER MODEL 842

With BD Vacutainer™ Sodium Citrate Coagulation Tube

To validate that the Drucker 842 horizontal centrifuge provides the required platelet poor plasma of less than 10×10^3 platelets / μL in seven (7) minutes when processing BD Vacutainer™ Sodium Citrate Coagulation Tubes (Blue Top) at 3,000 xg.

BACKGROUND

CLSI document H21-A5 recommends that all specimens to be used for Plasma-based Coagulation Assays be processed in a horizontal centrifuge at a g-force and centrifugation time suitable to provide platelet poor plasma (PPP). It is imperative that this speed and time be tested to confirm that PPP is achieved. CLSI also recommends revalidating the PPP procedure for centrifugation every 6 months or when the centrifuge is modified.

The following centrifuge functions will be validated by achieving platelet counts under the allowed 10×10^3 platelets / μL .

- The centrifuge provides adequate g-force
- The centrifuge spun the tubes for an adequate period of time
- Centrifuge braking after the run cycle does not cause remixing
- Function of the horizontal rotor as recommended by CLSI H21-A5

METHODS

Thirty (30) blood specimen were collected with BD Vacutainer™ Sodium Citrate coagulation tubes and centrifuged using the Drucker Model 842P horizontal centrifuge set with the following settings:

RPM: 4,600
RCF: 3,000 xg
Time: 7 minutes
Braking: 4

The blood specimen were centrifuged one complete cycle and removed from the centrifuge within 2 minutes of the completion of the cycle. The (30) blood specimen were analyzed for platelet count in random order after removal from the centrifuge. The platelet analyzer was a standard Sysmex Poch 100i hematology analyzer.



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RESULTS

After collecting and centrifuging thirty (30) Vacutainer™ 3.2 mL Blue Top tubes, each tube was inspected for proper separation and presence of hemolysis. In all cases, no hemolysis or other specimen issues were noted.

All tubes were tested for Platelet count using a POCH 100i hematology analyzer.

- The Average platelet count for the first 15 samples was 4.00×10^3 platelets / μL
- The Average platelet count for the second 15 samples was 2.87×10^3 platelets / μL
- The Average platelet count for all 30 samples was 3.43×10^3 platelets / μL
- All 30 samples tested were platelet poor

CONCLUSIONS

It is the professional opinion of the laboratory manager that the Drucker 842 centrifuge with horizontal rotor and the listed settings is well suited to supply STAT platelet poor plasma with BD sodium citrate coagulation tubes in seven (7) minutes. Due to the low platelet counts achieved while using seven (7) minutes, it is feasible that a six (6) minute centrifugation time would also yield acceptable platelet poor plasma for coagulation testing. An additional study validating a six (6) minute run time is recommended.

The test data can be found in Addendum A. The test protocol was executed under the supervision of Beth Bubb, (MT) ASCP

TEST LOCATION

Drucker Diagnostics Laboratory
200 Shadylane Drive
Philipsburg, PA 16866

EQUIPMENT

Centrifuge Model: Drucker Model 842
Rotor: 6-Place Horizontal, Standard
Test Tubes: BD Vacutainer™ 13mm x 75; Sodium Citrate (Blue Tops)
Analyzer: POCH 100i S/N: A4263

CENTRIFUGE SETTINGS

Speed: 4,600 RPM
G-Force: 3,000 xg
Run Time: 7 minutes
Braking: 4

ADDENDUM A

TEST DATA: SEPTEMBER 10

SPECIMEN #	PLATELETS x 10 ³ / uL
1	3
2	4
3	4
4	3
5	0
6	3
7	1
8	2
9	3
10	4
11	7
12	8
13	5
14	6
15	7
Average	4.00 x 10³ plt/uL

TEST DATA: SEPTEMBER 11

SPECIMEN #	PLATELETS x 10 ³ / uL
16	6
17	4
18	6
19	0
20	1
21	0
22	3
23	2
24	4
25	2
26	3
27	2
28	3
29	2
30	5
Average	2.87 x 10³ plt/uL

COMBINED AVERAGE: 3.43 x 10³ plt/uL