Comparison of BD Vacutainer Barricor, PST and PST II tubes processed with the Drucker DASH Apex 6 Centrifuge

Abstract:

A study of platelet count was performed to compare the BD Vacutainer[®] Barricor[™] Tube (BD Barricor[™]) with the BD Vacutainer[®] PST[™] Tube (BD PST[™]) and the BD Vacutainer[®] PST[™] II Tube (BD PST[™] II) when centrifuged in the Drucker DASH Apex 6 horizontal centrifuge. All study tubes were centrifuged at room temperature within 2 hours of draw according to BD's instructions for use: BD Barricor[™]: 3 minutes at 4000g; BD PST[™] and BD PST[™] II: 10 minutes at 1300g. Platelet count testing was performed within four hours of collection on a Sysmex XE 5000. BD Barricor[™] tubes, when processed with the preprogrammed parameters in the DASH Apex 6, delivered a lower platelet count than BD PST[™] and BD PST[™] II tubes as processed in this study.

Preparation:

An array of BD Vacutainer[®] tubes were placed in a Drucker DASH Apex centrifuge and spun at the centrifuge specifications noted in Figure 1. Apex DASH settings were used for the Barricor[™] tube while Horizon settings were used for the PST[™] and PST[™] II.

Specimens were transported to Mount Nittany Medical Center in State College, PA for analysis. Specimens were measured for plasma platelet count on a Sysmex XE 5000 to determine plasma clarity. These samples were analyzed four hours after sample collection. 40 samples were drawn and analyzed for each tube type and all samples were provided from Drucker Diagnostics' internal blood donors.

Results:

In examining Figure 2, it can be noted that after centrifugation in a Drucker DASH Apex unit, the Barricor[™] tube yielded lower plasma platelet counts than PST[™] and PST[™] II

Detailed results can be viewed under Addendum A

Conclusion:

Centrifuging BD Barricor[™] tubes with the Drucker DASH Apex 6 centrifuge for 3 minutes at 4000 xg results in a lower platelet count than BD PST[™] and BD PST[™] II processed for 10 minutes at 1300 xg. Similar results can be expected for BD Barricor[™] tubes processed in the DASH Apex 12 as the cycle parameters are identical to those on the DASH Apex 6.

Location:

Mount Nittany Medical Center 1800 E. Park Ave., State College Data Collection and Supervision Provided by: Josh T. Cowher

Test Dates:

May 2016

BD Vacutainer® Tube Type	Tube Size (mm)	Centrifugation Time (Minutes)	G-Force (xg)
Barricor™	13 x 75	3	4,000
Barricor™	13 x 100	3	4,000
PST™	13 x 75	10	1,300
PST™	13 x 100	10	1,300
PST [™] II	13 x 75	10	1,300
PST™II	13 x 100	10	1,300





Equipment:

Model: DASH Apex 6 Rotor: Horizon - 6 Tube Horizontal Rotor Tube Holder: 75 - 100 mm Tube Holder, P/N 7713083 Test Tubes: 13 x 75 and 13 x 100 BD Barricor[™] 13 x 75 and 13 x 100 BD PST[™] 13 x 75 and 13 x 100 BD PST[™] II Analyzer: Sysmex XE 5000

ADDENDUM A

	Platelet count 10 ⁹ /L			Platelet count 10º/L			
SPECIMEN #	13x75 BD Barricor™	13x75 BD PST™	13x75 BD PST™ II	SPECIMEN #	13x75 BD Barricor™	13x75 BD PST™	13x75 BD PST™ II
1	16	31	4	21	5	52	16
2	15	49	34	22	71	71	75
3	44	68	26	23	54	41	28
4	5	65	71	24	7	59	24
5	6	69	65	25	6	28	31
6	3	13	16	26	17	38	58
7	5	31	9	27	18	38	51
8	11	76	57	28	12	48	48
9	6	99	68	29	8	45	75
10	32	39	35	30	6	11	14
11	50	39	18	31	N/A	N/A	N/A
12	7	46	60	32	12	5	5
13	11	64	38	33	25	4	3
14	22	47	55	34	37	37	26
15	13	25	24	35	49	25	24
16	9	33	20	36	37	82	48
17	11	64	N/A	37	29	35	27
18	7	46	60	38	15	19	22
19	4	56	39	39	64	76	39
20	33	11	3	40	16	25	12
				Average	20.46	43.85	34.95

Table 1: Specimen number and platelet counts for 13x75 BD Barricor, PST[™], and PST[™] II *Specimen #31 and 13x75mm PST[™] II within specimen #17 may have been improperly prepared and was not included in the calculation of the mean



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ADDENDUM A

	Platelet count 10 ⁹ /L			Platelet count 10 ⁹ /L			
SPECIMEN #	13x100 BD Barricor™	13x100 BD PST™	13x100 BD PST™ II	SPECIMEN #	13x100 BD Barricor™	13x100 BD PST™	13x100 BD PST™ II
1	16	25	30	21	13	41	47
2	22	66	44	22	26	115	74
3	38	90	66	23	54	92	49
4	18	83	74	24	24	51	40
5	8	59	89	25	33	20	33
6	6	23	15	26	34	42	72
7	11	43	27	27	18	39	66
8	8	66	52	28	11	62	52
9	11	88	72	29	11	23	66
10	33	73	54	30	7	24	15
11	21	83	59	31	N/A	N/A	N/A
12	28	79	69	32	26	10	12
13	9	60	50	33	20	15	17
14	13	60	63	34	23	80	51
15	35	62	71	35	39	40	36
16	9	48	21	36	13	109	38
17	9	38	60	37	37	56	32
18	28	79	69	38	19	33	47
19	12	46	49	39	9	87	58
20	5	13	8	40	10	18	23
				Average	19.67	54.90	47.95

Table 2: Specimen number and platelet counts for 13x100 BD Barricor, PST[™], and PST[™] II

*Specimen #31 and 13x75mm PST[™] II within specimen #17 may have been improperly prepared and was not included in the calculation of the mean



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