COMPARATIVE STUDY OF QUALITY PARAMETERS OF APHERESIS PLATELETS STORED IN PLATELET ADDITIVE SOLUTION AND IN PLASMA.

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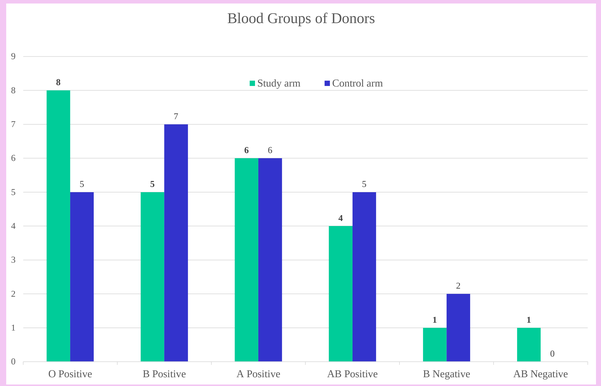
Background **: Platelet additive solutions (PAS) are crystalloid, isotonic buffered solution nutrient media used in place of plasma for platelet storage. They replace 60%–70% of plasma in platelet components, so the amount of storage plasma can be decreased. It contain substances that might be beneficial for preservation of platelet function during storage and might protect platelets from the storage lesions and can also be used to extend shelf life of platelet concentrates. Single donor apheresis platelets(SDAP) are generally prepared and stored with 200-300ml of donor plasma with a shelf life of 5 days.**



Objectives: **To study and compare in vitro changes in platelet indices – swirling, pH , platelet count, mean platelet volume(MPV),Bicarbonates in PAS and plasma stored apheresis platelets on day 1, 5 and 7th day of collection.**

Methods **: A prospective study was conducted on 50 randomly selected apheresis platelet products, of which 25 were stored in PAS(study group) and 25 in plasma(control group). Eligible donor selection criteria was as per departmental standard operating procedure. Quality Parameters were compared in both groups on days 1,5 and 7.**

COMPARISON OF PLATELET INDICES BETWEEN PLASMA AND PAS STORED PLATELET CONCENTRATES

	Plasma			PAS		
	Day 1	Day 5	Day 7	Day 1	Day 5	Day 7
WBC	0.505	0.748	0.683	0.82	0.69	0.90
HB	0.076	0.116	0.144	0.13	0.12	0.13
HCT	0.194	0.128	0.072	0.02	0.07	0.12
MCV/MPV	10.05	14.39	9.37	6.72	8.06	8.48
PLT	1412.64	1333.72	1188.72	1447.69	1294.00	1202.27
PH	7.30	7.09	6.96	7.19	7.13	7.06
PO2	148.36	140.44	103.96	121.04	119.81	130.12
PCO2	41.69	48.78	48.27	51.42	48.42	48.08
HCO3	16.088	9.83	5.52	9.03	6.23	5.17
Volume in ML	266.99	266.99	266.99	266.99	266.99	266.99
QC	3.772	3.561	3.174	3.865	3.455	3.210

Results **: PAS stored platelets well maintained platelet counts and pH(>6.9),gradual decrease in bicarbonates from day1(16mmol/L) to day7(5mmol/L).On visual inspection swirling score indicated good viability at day1 and in some reduced at day7 indicating gradual fall in both groups. WBC counts in both groups were in normal range . Bacterial culture done on day 7 in both groups showed no growth.**

WBC counts in both plasma and PAS showed an acceptable values(<0.2 x 10^9/unit).Bacterial culture done on day 7 of both groups showed no bacterial growth.

Table I: Composition of different PAS (mmol/l)

Chemicals	Plasmalyte	PAS II	PAS III	PAS IIIM	Composol
Nacl	90	115.5	77.3	69.3	90
KCl	5	-	-	5	5
MgCl	3	-	-	1.5	1.5
NaCitrate	-	10	10.8	10.8	27
Na acetate	27	30	32.5	32.5	27
Na phosphate	-	-	28.2	28.2	-
Na Gluconate	23	-	-	-	23

Conclusions: **PAS stored platelets maintained more platelet count in comparison with plasma stored platelets from day 1 to day 7.Gradual decrease in bicarbonates in PAS platelets, helped in maintaining pH till day 7.The addition of PAS maintains quality parameter of SDAP within acceptable limits till day 7 of storage. Additional benefit of PAS is to decrease TTI and allergic transfusion reactions in patients.**

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References

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