Effect of Time from Venepuncture and Anticoagulant Choice on Platelet Count and Indices

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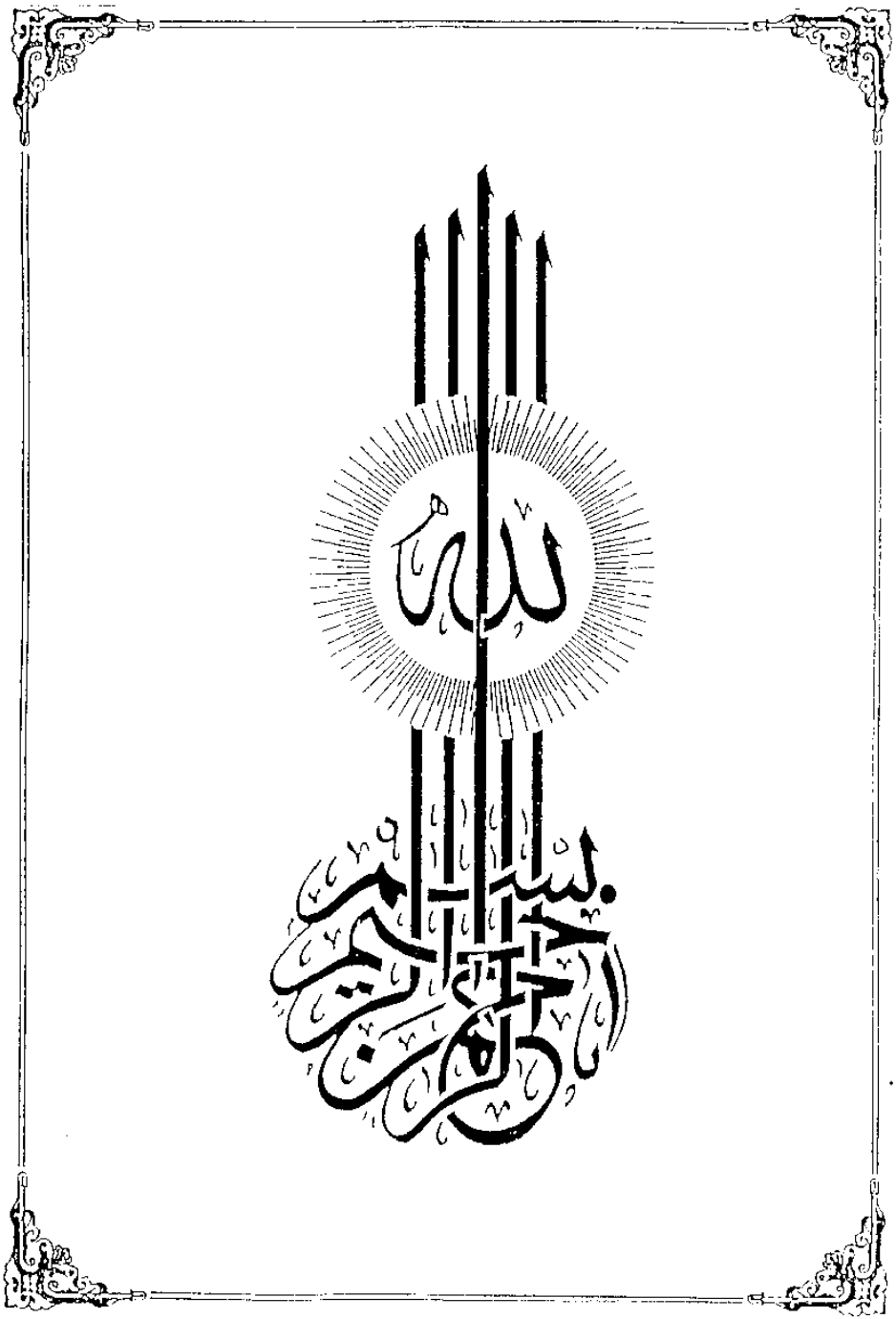

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Dedication.....

to the person who inspired me all my life, sacrificed a lot and received very little; to whom words are not enough to express any gratification.....

Mum,

Thank you so much for everything!!!

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Abstract

This study was performed on 41 apparently normal subjects who were not on any medications affecting platelet parameters nor suffering from hematological disorders. PC, MPV, Pct and PDW were estimated on an electronic counter using 2 routine anticoagulants in hematological practice, namely Na_3 citrate (9:1) and K_2 EDTA (50u, 100u, 200u) over a 24 hour period (at zero time, 1,2,3 and 24 hours). PC in citrated samples showed a highly significant decrease all through the tested time, due to stickiness of platelets to the wall of the tube, while in EDTA 50u and 100u insignificant decrease in count was observed all through the tested period. Concerning MPV measurements, these showed insignificant decrease in citrated samples, while with EDTA a highly significant increase over time was detected in the 3 different concentrations due to platelet shape changes from discoid to spherical. On the other hand, Pct showed a significant progressive decrease in citrated samples which can be explained by the associated decrease in count values, while EDTA 50u and 100u had insignificant effect on Pct levels. Values of PDW revealed a significant decrease in all concentrations of EDTA with a peak at 3 hours in 50u samples and at 24 hours in 100u samples, due to the homogenous increase in MPV recordings. As regards citrate, insignificant decrease was obvious all through the tested period. Finally EDTA 50u and 200u proved to have a better stability on the 4 platelet parameters than EDTA 200u. Significant inverse correlations were detected

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between PC and MPV in both EDTA 50u and 100u,while EDTA 200u showed no significant correlation. A significant correlation was detected between MPV and PDW in the above 2 concentrations. Student's paired t-test was performed for all the values obtained for statistical analysis. Thus, we conclude from the study that EDTA 50u and 100u are the best anticoagulants for platelet parameter estimation, considering 0 time to be the optimal time interval for readings.

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List of Abbreviations

%:	*percentage*
ACD:	*Acid citrate dextrose*
ADP:	*Adenosine diphosphate*
ATP:	*Adenosine triphosphate*
B-TG:	*Beta-thromboglobulin*
CBC:	*Complete blood count*
Cl:	*Chloride*
CPD:	*Citrate Phosphate Dextrose*
DNA:	*Deoxy Ribonucleic Acid*
EDTA:	*Ethylene Diamine Tetraacetic Acid*
ESR:	*Erythrocyte sedimentation rate*
fl:	*femtoliter*
g/l:	*gram per liter*
Hgb:	*Hemoglobin*
hr:	*hour*
hs:	*hours*
ICSH:	*International Council of Standardization in Hematology*
ITP:	*Immune thrombocytopenic purpura*
K:	*Potassium*
LDH:	*Lactate dehydrogenase*
MCV:	*Mean corpuscular volume*
MD:	*MicroDiff*
mg/ml:	*milligram per milliliter*
MI:	*Myocardial infarction*
mmol/l:	*millimole per liter*
MPV:	*Mean platelet volume*

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Na:	*Sodium*
PC:	*Platelet count*
Pct:	*Plateletcrit*
PDW:	*Platelet distribution width*
PG:	*Prostaglandin*
Plt:	*Platelet*
PRP:	*Platelet rich plasma*
r.p.m.:	*rounds per minute*
r.t.p.:	*room temperature*
RBC:	*Red blood cell*
RDW:	*Red cell distribution width*
s:	*seconds*
SD:	*Standard deviation*
U/ml:	*Unit per milliliter*
u:	*micron*
ul:	*microliter*
WBC:	*White blood cell*
WCC:	*White cell count*

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