THE EFFECTS OF APROTININ ON TWELVE DIFFERENT ACT TESTS

It is generally accepted that some activated clotting time (ACT) test results are altered by the presence of aprotinin in blood. Since aprotinin is frequently used during cardiopulmonary bypass (CPB), we have investigated its effect on several ACT tests using whole blood from CPB patients. With IRB approval, blood samples were collected from CPB patients before and after full heparinization (300 u / kg). Each blood sample was divided into two aliquots and aprotinin was added to one. Both aliquots were used simultaneously to perform 12 ACT tests. The following table illustrates, for each test and time point, the ACT in seconds using both aprotinized (A) and non-aprotinized (N) blood.

			Unheparinized (sec)			Heparinized (sec)		
Test	Activators	Machine	n	N	A	n	N	A
Max-ACT	Glass, Celite, Kaolin	ACTAlyke	14	126 ± 13	129 ± 13	15	592 ± 252	603 ± 227
G-ACT	Glass	ACTAlyke	10	177 ± 21	229 ± 39*	N/A		
C-ACT	Celite	ACTAlyke	10	131 ± 15	161 ± 22*	10	513 ± 117	791 ± 156*
K-ACT	Kaolin	ACTAlyke	10	135 ± 11	138 ± 14	10	492 ± 53	588 ± 111*
FT/CA510	Celite	Response	13	144 ± 18	163 ± 17*	14	544 ± 133	903 ± 108*
P214	Glass	Response	7	132 ± 26	184 ± 15*	N/A		
FTK-ACT	Kaolin	Response	9	132 ± 19	139 ± 14	10	588 ± 80	569 ± 89
ACT	Kaolin	Gem	13	120 ± 21	121 ± 20	11	462 ± 55	481 ± 60*
ACT+	Kaolin	Jr. Signature	14	132 ± 12	135 ± 11	13	496 ± 112	512 ± 53
HMT	Celite	Rapidpoint	14	161 ± 57	205 ± 52*	15	448 ± 73	618 ± 109*
SonACT	Celite	Sonoclot	13	140 ± 39	147 ± 28	12	420 ± 63	852 ± 207*
HR-ACT	Kaolin	HMS	13	145 ± 17	143 ± 13	15	571 ± 182	630 ± 201*

Data is expressed as Mean ± SD.
*Denotes significant difference ($p<0.05$) between N and A group (Paired t-test).

Nine of the 12 tests were significantly affected by aprotinin with either heparinized or unheparinized blood samples. Each test responded uniquely to the presence of aprotinin in the sample producing results ranging from 12 – 51% above nonaprotinized values. Also, several tests that were affected by aprotinin in heparinized blood samples were unaffected with unheparinized blood samples. This data may be in conflict with aprotinin's well documented anticoagulatory affect, and demonstrates that none of the tests regardless of the activator, will respond to aprotinin identically.

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