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What is the effect of artificial hemodilution on the Sonoclot signature?

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Background and Goal of Study: Point of care coagulation tests provide rapid information that may be essential for clinical decision making during surgery. Viscoelastometry however is af fected by hemodilution, independently from coagulation status and this may complicate interpretation of the test results both in clinical practice and in research. We hypothesized that standard pro-cessing of blood samples towards a fixed hematocrit would eliminate this con-founder and reduce between subject variability.
Materials and Methods: Blood samples were collected from 20 young healthy, female volunteers. Citrated blood (3.6 ml, 3.2 % citrate (109mM)) was used for the Sonoclot analysis; 1 ml of citrated blood was transferred to a plas-tic cuvette and 40 µl $CaCl_2$ was added to reactivate coagulation. 330 µl was pipetted to a gbACT+ (glass bead Activated Clotting Time) Sonoclot cuvette. One blood sample of each volunteer was diluted with autologous plasma to a fixed hematocrit (Hct) of 30 % (CV: 29.5-30.5 %). Plasma was obtained af ter double high-speed centrifugation. The diluted sample was recalcified and pro-cessed for Sonoclot analysis as compared to the non-diluted sample. **Results and Discussion:** Control samples (Hct 36.6% (CV: 35.6-37.5 %) and processed samples (Hct 30%) did not dif fer with regard to gbACT (162 s (20.2) vs 163 s (19.4); p = 0.727), maximum amplitude (MA) (73 units (9.3) vs 80 units (12.2); p = 0.2162). However, CR (clot rate) increased (from 28 units/min (5.4) to 33 units/ min (7.4) ; p = 0.01208); and PF (platelet function) increased from 3.1 (1.09) to 3.9 (1.01); p = 0.01718) af ter processing of the blood samples to a standard Hct of 30% and TTP (time to peak) decreased from 9.9 min (3.25) to 8.5 min (6.19); (p = 0.01923).
Conclusion: Processing of whole blood samples to a fixed hematocrit did not reduce between subject variability in Sonoclot POC coagulation param-eters in healthy volunteers. Our data show that hemodilution with autogolous plasma produced consistent changes suggestive for in vitro activation of co-agulation.