A quantitative assay system for protein C activity, the regulator of blood coagulation, based on a chromogenic method mimicking the blood coagulation cascade.

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Abstract

Background and aims: Protein C is a plasma protein, and its active form regulates blood coagu lation. The recommended unit of protein C activity is IU/mL; however, some laboratories use percentage. Some deficiencies cannot be detected owing to measurement principles. This study sought to quantify protein C activity levels and overcome the limitations of the current measurements. Materials and methods: Our protein C activity measurement method mimicked the blood coagu lation cascade and used a thrombin-specific chromogenic reagent. The control was prepared by adding protein C to the protein C deficient plasma. The calibration curve was plotted as the in crease in the absorbance per minute and the concentration of protein C in the control. Statistical tests were performed to compare our method with the current chromogenic method. Results: A calibration curve was constructed (y = 0.0132x + 0.14, R 2 = 0.9987, n = 10). The statistical results of our method suggested non-inferiority when compared to the current chro mogenic method (α = 0.05). Conclusion: The quantitative measurement was performed using plasma samples. Our method provides the possibility of expressing protein C activity quantitatively and detecting deficiencies that cannot be detected using the current chromogenic method.