

ORIGINAL ARTICLE

Effects of Hemolysis on Routine Coagulation Tests when Tested on an Optical Coagulation Analyzer

Hao Yang, Yijia Zhao, Siqi Guo, Jiajing He, Luyun Peng, Yuefang Wang,
Ge Zhang, Yongmei Jiang

Department of Laboratory Medicine, West China Second University Hospital, Sichuan University Key Laboratory of Birth Defects and Related Diseases of Women and Children, Sichuan University, Ministry of Education, Chengdu, China

SUMMARY

Background: The Clinical and Laboratory Standards Institute recommends rejecting hemolyzed samples for coagulation tests. Sysmex CS5100 analyzer using an optical method is commonly used in laboratories. The influence of hemolysis on coagulation test has rarely been studied when tested on Sysmex CS5100. Determining this influence is necessary.

Methods: Freshly collected samples were artificially hemolyzed to simulate the hemolysis processes. Coagulation tests were conducted on a Sysmex CS5100 coagulation analyzer. Detection values before and after hemolysis were compared.

Results: The results showed that after hemolysis detection, the prothrombin time (PT) statistically decreased, while the partial thromboplastin time (APTT) statistically increased. There were no significant differences in fibrinogen (Fg), thrombin time (TT), D-dimer (DD) or fibrinogen degradation products (FDPs). Antithrombin activity was elevated in hemolyzed samples.

Conclusions: Although differences in PT and APTT were statistically significant, there was no need for rejection of hemolyzed samples due to insufficient clinical effects when tested on Sysmex CS5100 analyzer. Falsely elevated AT result may lead to misdiagnosis in patients with severe diseases, which should be carefully considered.

(Clin. Lab. 2023;69:xx-xx. DOI: 10.7754/Clin.Lab.2023.220803)

Correspondence:

Yongmei Jiang
Department of Laboratory Medicine
West China Second University Hospital
Sichuan University Key Laboratory of
Birth Defects and Related Diseases of Women and Children
Sichuan University
Ministry of Education
Chengdu
China
Email: 542578700@qq.com

Supplementary Data

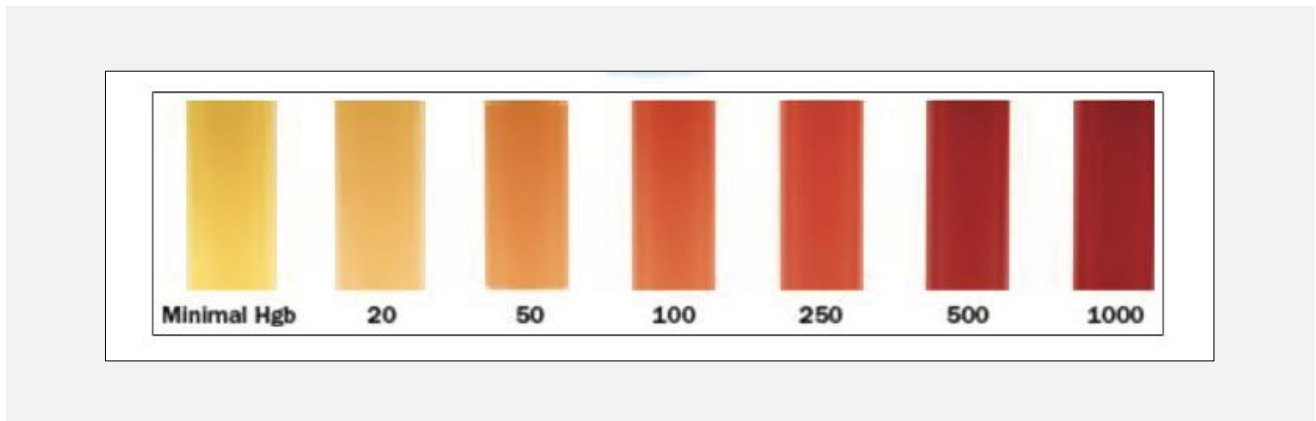


Figure S1. Colorimetric card for preliminary detection of plasma hemoglobin. The unit is mg/dL.

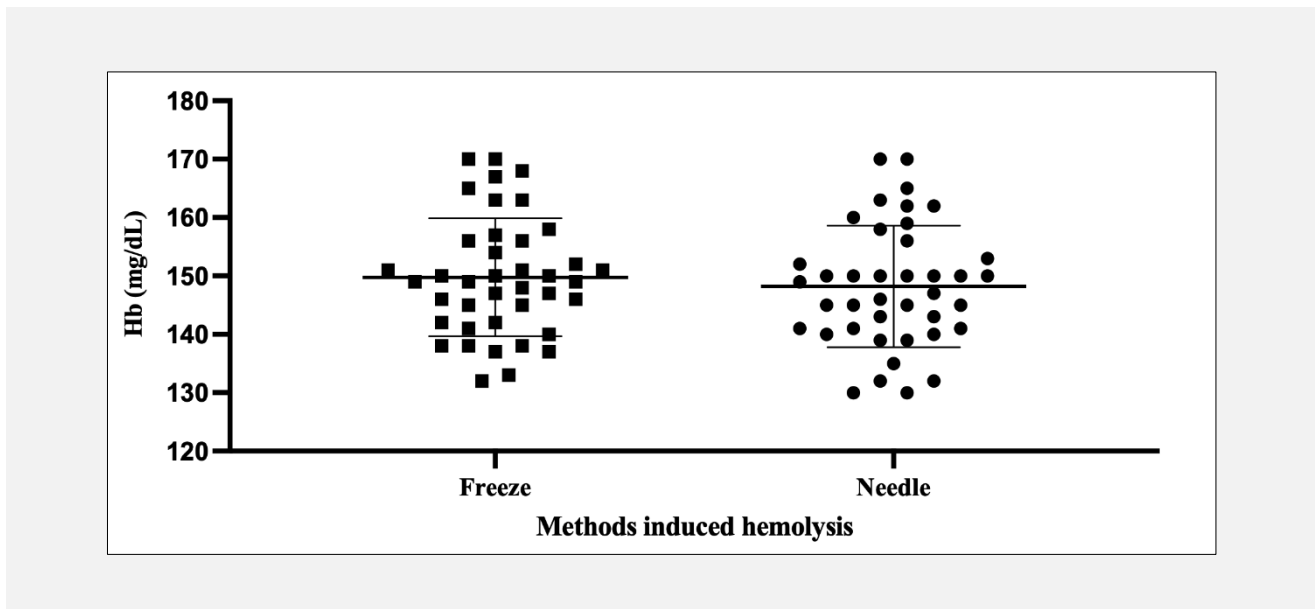


Figure S2. Concentrations of hemoglobin in plasma measured by blood cell analyzer (Sysmex XN9000, Japan) were approximately the same after hemolysis using both methods.