

Effect of light and temperature on laboratory assessment of serum bilirubin

Bandara A.M.S., Damayanthi W.R.S. and Priyadarshani A.M.B.*

Department of Allied Health Sciences, Faculty of Medical Sciences, University of Sri Jayawardenepura, Gangodawila, Nugegoda, Sri Lanka.

Serum bilirubin measurement is an important diagnostic tool. Bilirubin is a photosensitive molecule making it possible to undergo degradation during the process of laboratory analysis. Objective of this study was to investigate the effect of temperature and light on the stability of serum bilirubin. Serum samples from 34 apparently healthy subjects were used in the study. Bilirubin determination was done by dimethylsulfoxide (DMSO) method using automated Mindray BF 300 analyzer. To determine the effect of temperature serum samples were exposed to -4°C and 33°C for 2 and 24 hours, and to find out the effect of light, serum samples were exposed to sun-light for 6 hours and two CFL bulbs (15 W each) for 24 hours. Data were analyzed using ANOVA followed by *post hoc* Dunnett's test. Though apparently healthy individuals were enrolled in the study, 8 subjects out of 34 were hyperbilirubinaemic. There was a significant reduction in direct, indirect and total bilirubin fractions in the samples exposed to sun-light for 6 hours. Only total and indirect bilirubin fractions had been significantly reduced in the samples exposed to artificial light. The effect was the same in the normobilirubinaemic samples exposed to 33°C for 24 hours but in hyperbilirubinaemic samples all the bilirubin fractions had been reduced significantly. There was no significant reduction in bilirubin where samples were stored at -4°C for 2 and 24 hours, and at 33°C for 2 hours. Therefore, to measure bilirubin, serum samples can be stored at -4°C up to 24 hours and at 33°C up to 2 hours with light protection, without significant reduction in bilirubin concentrations.

Keywords: Direct bilirubin, indirect bilirubin; total bilirubin

Acknowledgements: We would like to express our sincere thanks to the subjects who participated in the study.

*Corresponding Author: priyadarshani@sjp.ac.lk