

ABSTRACT

Background: Total bilirubin in serum is unstable and easily degrades when exposed to light. Improper pre-analytical handling, particularly regarding light exposure, can lead to inaccurate bilirubin examination results.

Objective: To understanding the influence, average, and extent of the decline in total bilirubin levels in serum samples on the intensity of lamp light.

Method: This research used a pre-experimental design with a one-group pretest-posttest approach. Serum samples were taken from 6 students divided into 6 groups: immediate examination, and exposure to light intensity levels of 200–400 lux, 400–600 lux, 600–800 lux, 800–1000 lux, and 1000–1200 lux for 1 hour. Total bilirubin levels were measured using the *Jendrassik-Grof* method. Data were analyzed using *Repeated Measures Anova*.

Results: The mean total bilirubin level in the immediate examination was 0.71 mg/dL. After light exposure, the levels sequentially decreased to 0.58 mg/dL (200–400 lux), 0.46 mg/dL (400–600 lux), 0.34 mg/dL (600–800 lux), 0.26 mg/dL (800–1000 lux), and 0.18 mg/dL (1000–1200 lux). Statistical analysis showed a significant difference with a p-value of 0.000 ($p < 0.05$), indicating that light intensity significantly affects the reduction of total bilirubin levels.

Conclusion:

Lamp light intensity affects total bilirubin levels in serum. The higher the light intensity, the greater the decrease in total bilirubin levels.

Keywords: Total bilirubin, light intensity, serum, pre-analytical phase

ABSTRAK

Latar Belakang: Bilirubin total dalam serum bersifat tidak stabil dan mudah mengalami degradasi apabila terpapar cahaya. Penanganan pra-analitik yang kurang memperhatikan faktor pencahayaan dapat menyebabkan hasil pemeriksaan bilirubin menjadi tidak akurat.

Tujuan: Mengetahui pengaruh, rerata, besarnya penurunan kadar bilirubin total dalam sampel serum terhadap intensitas cahaya lampu.

Metode: Penelitian menggunakan desain pre-eksperimental dengan one group pretest-posttest. Sampel berupa serum dari 6 mahasiswa yang dibagi menjadi 6 kelompok : pemeriksaan segera, dan paparan intensitas cahaya 200–400 lux, 400–600 lux, 600–800 lux, 800–1000 lux, dan 1000–1200 lux selama 1 jam. Kadar bilirubin total diukur menggunakan metode *Jendrassik-Grof*. Data dianalisis menggunakan uji *Repeated Measures Anova*.

Hasil: Rerata kadar bilirubin total pemeriksaan segera sebesar 0,71 mg/dL. Setelah paparan cahaya, kadar bilirubin menurun berturut-turut menjadi 0,58 mg/dL (200–400 lux), 0,46 mg/dL (400–600 lux), 0,34 mg/dL (600–800 lux), 0,26 mg/dL (800–1000 lux), dan 0,18 mg/dL (1000–1200 lux). Hasil uji statistik menunjukkan nilai signifikansi $p = 0,000$ ($p < 0,05$) yang berarti terdapat pengaruh signifikan intensitas cahaya terhadap penurunan kadar bilirubin total.

Kesimpulan: Intensitas cahaya lampu berpengaruh terhadap kadar bilirubin total dalam serum. Semakin tinggi intensitas cahaya, semakin besar penurunan kadar bilirubin total.

Kata Kunci: Bilirubin total, intensitas cahaya, serum, pra-analitik.