ABSTRAK

Latar Belakang: Bilirubin indirek penting dalam evaluasi fungsi hati namun stabilitas serum sangat dipengaruhi oleh paparan cahaya sehingga dapat menyebabkan penurunan kadar secara signifikan. Aluminium foil umum digunakan untuk melindungi sampel dari cahaya, namun keterbatasan ketersediaan dan biaya mendorong pencarian alternatif lain seperti plastik Low-Density Polyethylene (LDPE).

Tujuan: Mengetahui besar perbandingan rerata perbedaan (mean difference), rata-rata dan persentase kadar bilirubin indirek pada serum yang terlapisi aluminium foil dan terbungkus Plastik LDPE dibandingkan dengan pemeriksaan segera (kontrol).

Metode: Penelitian *quasi eksperimental* dengan *desain post-test only control group.* Sampel serum dibagi tiga kelompok: pemeriksaan segera, terlindung aluminium foil, dan terlindung plastik LDPE. Kadar bilirubin total dan direk diukur menggunakan spektrofotometer, kadar indirek dihitung dari selisihnya. Analisis menggunakan uji *Repeated Measures* ANOVA.

Hasil: Rerata kadar bilirubin indirek adalah 0,23 mg/dL (kontrol), 0,22 mg/dL (aluminium foil), dan 0,20 mg/dL (plastik LDPE). Penurunan kadar masing-masing 5,98% dan 14,10%.

Kesimpulan: Perbedaan bermakna secara statistik ($p<0,05$), namun bias relatif di bawah batas *Total Error Allowable* dari CLIA 20%, sehingga tidak bermakna secara klinis.

Kata kunci: Bilirubin indirek, aluminium foil, plastik LDPE, laboratorium klinik

ABSTRACT

Background: Indirect bilirubin is important in evaluating liver function, but serum stability is greatly affected by light exposure, which can lead to a significant decrease in levels. Aluminum foil is commonly used to protect samples from light, but limitations in availability and cost drive the search for other alternatives such as Low-Density Polyethylene (LDPE) plastic.

Objective: To determine the magnitude of the mean difference (mean difference), the average, and the percentage of indirect bilirubin levels in serum coated with aluminum foil and wrapped in LDPE plastic compared to immediate examination (control).

Method: Quasi-experimental study with a post-test only control group design. Serum samples were divided into three groups: immediate examination, protected by aluminum foil, and protected by LDPE plastic. Total and direct bilirubin levels were measured using a spectrophotometer, and indirect levels were calculated from the difference. Analysis was conducted using the Repeated Measures ANOVA test.

Result: The mean indirect bilirubin levels were 0.23 mg/dL (control), 0.22 mg/dL (aluminum foil), and 0.20 mg/dL (LDPE plastic). The decrease in levels was 5.98% and 14.10%, respectively.

Conclusion: There was a statistically significant difference ($p<0.05$), but the relative bias was below the Total Allowable Error of CLIA at 20%, so it was not clinically significant.

Keywords: Indirect bilirubin, aluminum foil, LDPE plastic, clinical laboratory