

## ABSTRAK

**Latar Belakang :** Ikterus neonatus merupakan kondisi yang sering terjadi pada bayi baru lahir akibat peningkatan kadar bilirubin dalam darah. Pemeriksaan bilirubin total umumnya menggunakan serum sebagai spesimen standar karena memiliki stabilitas yang baik dan menjadi rujukan dalam pemeriksaan kimia klinik. Namun, pada neonatus penggunaan serum sering terkendala oleh keterbatasan volume darah, waktu pembekuan yang relatif lama, serta kebutuhan pemeriksaan lain. Plasma EDTA dan plasma heparin dapat digunakan sebagai alternatif spesimen, tetapi perbedaan mekanisme kerja antikoagulan berpotensi memengaruhi hasil pemeriksaan bilirubin total.

**Tujuan Penelitian :** Mengetahui perbedaan kadar bilirubin total berdasarkan jenis spesimen serum, plasma heparin, dan plasma EDTA pada bayi dengan ikterus neonatous.

**Metode Penelitian :** Penelitian ini menggunakan metode observasional analitik dengan desain cross sectional. Sampel penelitian berupa darah bayi dengan ikterus neonatus yang diperiksa menggunakan spesimen serum, plasma heparin, dan plasma EDTA. Data dianalisis menggunakan uji normalitas *Shapiro-Wilk* dan dilanjutkan dengan uji *Friedman* untuk mengetahui perbedaan kadar bilirubin total berdasarkan jenis spesimen. Evaluasi mutu dilakukan menggunakan *Total Error* (TE) dan *Total Error Allowable* (TEa).

**Hasil Penelitian :** Rerata kadar bilirubin total pada serum sebesar  $16,13 \pm 3,30$  mg/dL, plasma heparin  $16,06 \pm 3,27$  mg/dL, dan plasma EDTA  $15,21 \pm 3,09$  mg/dL. Hasil uji *Friedman* menunjukkan terdapat perbedaan kadar bilirubin total berdasarkan jenis spesimen ( $p < 0,05$ ). Uji lanjut *Wilcoxon Signed Rank Test* menunjukkan plasma heparin tidak berbeda bermakna dengan serum ( $p = 0,447$ ), sedangkan plasma EDTA berbeda bermakna dengan serum ( $p = 0,000$ ). Nilai *Total Error* (TE) plasma heparin dan plasma EDTA masih berada di bawah batas *Total Error Allowable* (TEa) 20%.

**Kesimpulan :** Terdapat perbedaan hasil pemeriksaan bilirubin total antara serum dengan plasma heparin maupun plasma EDTA. Plasma heparin menunjukkan hasil yang lebih mendekati serum daripada plasma EDTA.

**Kata Kunci :** bilirubin total, ikterus neonatus, serum, plasma EDTA, plasma heparin.

## **ABSTRACT**

**Introduction :** Neonatal jaundice is a common condition in newborns caused by elevated bilirubin levels in the blood. Total bilirubin examination generally uses serum as the standard specimen because of its good stability and its role as a reference specimen in clinical chemistry testing. However, in neonates, the use of serum is often limited by small blood volume, longer clotting time, and the need for additional laboratory examinations. Ethylenediaminetetraacetic acid (EDTA) plasma and heparin plasma may be used as alternative specimens, but differences in anticoagulant mechanisms may affect total bilirubin test results.

**Purpose :** To determine the differences in total bilirubin levels based on serum, heparin plasma, and ethylenediaminetetraacetic acid (EDTA) plasma specimens in neonates with neonatal jaundice.

**Methods :** This study used an analytical observational method with a cross-sectional design. Blood samples from neonates with neonatal jaundice were examined using serum, heparin plasma, and ethylenediaminetetraacetic acid (EDTA) plasma specimens. Data were analyzed using the Shapiro-Wilk normality test followed by the Friedman test to determine differences in total bilirubin levels among specimen types. Quality evaluation was performed using Total Error (TE) and Total Allowable Error (TEa).

**Results :** The results showed that the mean total bilirubin levels were  $16.13 \pm 3.30$  mg/dL in serum,  $16.06 \pm 3.27$  mg/dL in heparin plasma, and  $15.21 \pm 3.09$  mg/dL in EDTA plasma. The Friedman test revealed a significant difference in total bilirubin levels among the specimen types ( $p < 0.05$ ). The Wilcoxon Signed-Rank Test showed no significant difference between serum and heparin plasma ( $p = 0.447$ ), whereas a significant difference was observed between serum and EDTA plasma ( $p = 0.000$ ). The Total Error (TE) values for both heparin plasma and EDTA plasma were below the Total Allowable Error (TEa) limit of 20%.

**Conclusion :** There were differences in total bilirubin test results between serum and both heparin plasma and ethylenediaminetetraacetic acid (EDTA) plasma. Heparin plasma showed results closer to serum compared to EDTA plasma.

**Keywords :** total bilirubin, neonatal jaundice, serum, ethylenediaminetetraacetic acid (EDTA) plasma, heparin plasma.