

ABSTRACT

Background: Blood glucose testing is important for the diagnosis and monitoring of Diabetes Mellitus. One of the most common errors in blood glucose testing is a delay in the centrifugation process, which can lead to a decrease in glucose levels due to glycolysis by blood cells. The use of Serum Separator Tubes (SST) as a blood collection medium facilitates serum separation; however, it still poses a risk to glucose stability when centrifugation is delayed.

Objective: To determine the effect of delayed centrifugation time variation on blood glucose levels in Serum Separator Tubes (SST).

Methods: This study was a pre-experimental study using a one-group pretest-posttest design. Venous blood samples were collected and divided into four groups based on centrifugation delay time: 30 minutes, 1 hour, 2 hours, and 4 hours. Blood glucose levels were measured using spectrophotometry. Data were analyzed using the Shapiro-Wilk normality test followed by Repeated Measures ANOVA using SPSS 16.0 for Windows.

Results: The average blood glucose levels at 30-minute, 1-hour, 2-hour, and 4-hour delays were 112.4 mg/dL, 104.6 mg/dL, 96.9 mg/dL, and 89.4 mg/dL, respectively. ANOVA results showed a significant p -value ($0.000 < 0.05$), indicating a significant decrease in glucose levels due to prolonged centrifugation delay in Serum Separator Tubes (SST).

Conclusion: This study concludes that delayed blood centrifugation for 30 minutes, 1 hour, 2 hours, and 4 hours has a significant effect on the decrease in blood glucose levels.

Keywords: Blood glucose levels, centrifugation delay, Serum Separator Tube (SST)

ABSTRAK

Latar Belakang: Pemeriksaan kadar glukosa darah penting untuk diagnosis dan pemantauan Diabetes Mellitus. Salah satu kesalahan paling umum pada pemeriksaan kadar glukosa darah adalah keterlambatan dalam proses sentrifugasi, yang dapat menyebabkan penurunan kadar glukosa akibat proses glikolisis oleh sel darah. Penggunaan Serum Separator Tube (SST) sebagai media pengumpulan sampel darah memberikan kemudahan dalam pemisahan serum, namun tetap berisiko terhadap penurunan stabilitas glukosa bila terjadi penundaan sentrifugasi.

Tujuan: Mengetahui pengaruh variasi waktu penundaan sentrifugasi terhadap kadar glukosa darah pada tabung *Serum Separator Tube* (SST).

Metode Penelitian: Penelitian ini merupakan penelitian *pre-experimental* dengan desain penelitian *One group pretest-posttest design*. Sampel darah vena dikumpulkan dan dibagi menjadi empat kelompok berdasarkan waktu penundaan sentrifugasi, yaitu 30 menit, 1 jam, 2 jam, dan 4 jam. Kadar glukosa darah diukur menggunakan spektrofotometri. Data dianalisis menggunakan uji normalitas *Shapiro-Wilk* dan dilanjutkan dengan uji parametrik *Repeated Measures ANOVA*. Jika terdapat pengaruh lama penundaan sentrifugasi darah terhadap penurunan kadar glukosa, maka analisis dilanjutkan dengan uji perbandingan berpasangan (*Pairwise Comparison*) menggunakan *SPSS 16.0 for Windows*.

Hasil Penelitian: Rata-rata kadar glukosa darah pada waktu penundaan 30 menit, 1 jam, 2 jam, dan 4 jam berturut-turut adalah 112,4 mg/dL, 104,6 mg/dL, 96,9 mg/dL, dan 89,4 mg/dL. Hasil uji ANOVA menunjukkan nilai signifikansi $p(0,000) < 0,05$, yang berarti terdapat penurunan kadar glukosa darah akibat lama penundaan sentrifugasi pada *Serum Separator Tube* (SST).

Kesimpulan: Kesimpulan pada penelitian ini adalah terdapat pengaruh penundaan sentrifugasi darah selama 30 menit, 1 jam, 2 jam dan 4 jam terhadap penurunan kadar glukosa darah.

Kata Kunci: Kadar glukosa darah, penundaan sentrifugasi, *Serum Separator Tube* (SST)