ABSTRACT

Background: The pre-analytical phase is an important part of laboratory testing, contributing about 60-70% of total errors. One of the causes of these errors is the delay in sample handling, including the delay in blood centrifugation. This delay can affect the quality of serum and the results of tests, especially for sensitive analytes like potassium.

Objective: This study aims to determine the effect of delayed centrifugation time at 30 minutes, 1 hour, 2 hours, and 4 hours on potassium levels in serum.

Methods: The research is a pre-experimental study with a one group pretest-posttest design. The samples were venous blood from 8 students in the Bachelor Of Applied Science In Medical Laboratory Technology. Each blood sample was placed into four Serum Separator Tubes and delayed for 30 minutes, 1 hour, 2 hours, and 4 hours before being centrifuged. Potassium levels were measured using the kinetic colorimetric method, and the results were analyzed descriptively and statistically using the Repeated Measures ANOVA test with SPSS version 16.0 for Windows.

Results: The study found that potassium levels increased as the delay in centrifugation time increased. The average potassium levels were 4.41 mmol/L after a 30-minute delay, 4.95 mmol/L after 1 hour, 5.73 mmol/L after 2 hours, and 6.81 mmol/L after 4 hours.

Conclusion: There is a significant effect of the duration of blood centrifugation delay on the increase in serum potassium levels. The longer the delay, the higher the potassium concentration measured.

Keywords: *delayed, potassium levels, serum separator tube*

ABSTRAK

Latar Belakang: Tahap pra-analitik merupakan bagian penting dalam proses pemeriksaan laboratorium yang menyumbang sekitar 60-70% dari total kesalahan yang terjadi. Salah satu faktor penyebabnya adalah keterlambatan dalam penanganan sampel, termasuk penundaan sentrifugasi darah. Penundaan ini dapat mempengaruhi kualitas serum dan hasil pemeriksaan, terutama terhadap analit yang sensitif seperti kalium.

Tujuan: Penelitian ini bertujuan untuk mengetahui pengaruh variasi waktu penundaan sentrifugasi darah selama 30 menit, 1 jam, 2 jam dan 4 jam terhadap kadar kalium.

Metode: Jenis penelitian ini adalah *pre-eksperimental* dengan desain *one group pretest-posttest*. Sampel yang digunakan adalah darah vena dari 8 responden mahasiswa Sarjana Terapan Teknologi Laboratorium Medis. Masing-masing sampel darah dimasukkan ke dalam empat *Serum Separator Tube* dan ditunda selama 30 menit, 1 jam, 2 jam dan 4 jam sebelum disentrifugasi. Pemeriksaan kadar kalium dilakukan menggunakan metode kinetik kolorimetri dan hasilnya dianalisis secara deskriptif serta secara statistik menggunakan uji *Repeated Measures ANOVA* pada *SPSS 16.0 for Windows*.

Hasil: Hasil penelitian menunjukkan terjadinya peningkatan kadar kalium seiring bertambahnya waktu penundaan sentrifugasi. Rata-rata kadar kalium pada penundaan 30 menit sebesar 4,41 mmol/L, penundaan 1 jam sebesar 4,95 mmol/L, penundaan 2 jam sebesar 5,73 mmol/L, dan penundaan 4 jam sebesar 6,81 mmol/L.

Kesimpulan: Terdapat pengaruh yang signifikan antara lama penundaan sentrifugasi darah terhadap peningkatan kadar kalium serum. Semakin lama durasi penundaan, kadar kalium yang terukur cenderung meningkat.

Kata Kunci: *penundaan sentrifugasi, kadar kalium, serum separator tube*