

ABSTRAK

Latar Belakang: Laboratorium harus memperhatikan kualitas hasil yang dikeluarkan sesuai dengan *Standar Operasional Prosedur* (SOP). Stabilitas bahan kontrol merupakan faktor penting dalam menjaga kualitas hasil pemeriksaan. Aktivitas enzim *Alanine Aminotransferase* diketahui dapat menurun seiring lamanya penyimpanan.

Tujuan: Penelitian ini bertujuan untuk mengetahui pengaruh lama penyimpanan serum kontrol *liofilisat* komersial setelah rekonstitusi pada suhu -20°C selama 20, 30, dan 40 hari terhadap aktivitas enzim *Alanine Aminotransferase* (ALT).

Metode: Jenis penelitian ini adalah *quasi-eksperimen* dengan desain *Nonequivalent Control Grup Design*. Menggunakan subjek berupa serum kontrol komersial yang direkonstitusi dan disimpan pada suhu -20°C . Aktivitas enzim *Alanine Aminotransferase* (ALT) diukur segera setelah rekonstitusi dan setelah penyimpanan selama 20, 30 dan 40 hari.

Hasil: Analisis deskriptif menunjukkan adanya penurunan rata-rata aktivitas enzim *Alanine Aminotransferase* (ALT) seiring bertambahnya waktu penyimpanan dengan presentase penurunan sebesar 2,70% (20 hari), 7,48% (30 hari) dan 11,71% (40 hari) dibandingkan dengan pengukuran segera setelah rekonstitusi. Analisis statistik *Repeated Measures Anova* dan *Pairwise Compromised* menunjukkan adanya pengaruh penyimpanan terhadap aktivitas enzim *Alanine Aminotransferase* setelah penyimpanan pada suhu -20°C dengan rata-rata penurunan sebanyak 1,07 U/L (20 hari), 2,94 U/L (30 hari) dan 4,58 U/L (40 hari).

Kesimpulan: Ada pengaruh penyimpanan serum kontrol *liofilisat* komersial setelah rekonstitusi pada suhu -20°C terhadap aktivitas enzim *Alanine Aminotransferase*

Kata Kunci: Lama Penyimpanan, Bahan Kontrol, Aktivitas Enzim *Alanine Aminotransferase* (ALT)

ABSTRACT

Background: Laboratories must ensure the quality of their results in accordance with Standard Operating Procedures (SOP). The stability of control materials is a crucial factor in maintaining the quality of test results. The activity of the enzyme Alanine Aminotransferase (ALT) is known to decrease with longer storage durations.

Objective: This study aims to determine the effect of storage duration (20, 30, and 40 days) of commercial lyophilized control serum after reconstitution at -20°C on the activity of the enzyme Alanine Aminotransferase (ALT).

Methods: This research is a quasi-experimental study with a Nonequivalent Control Group Design. It used commercial control serum as the subject, which was reconstituted and stored at -20°C . The activity of the Alanine Aminotransferase (ALT) enzyme was measured immediately after reconstitution and after storage for 20, 30, and 40 days.

Results: Descriptive analysis showed a decrease in the average activity of Alanine Aminotransferase (ALT) with longer storage times, with percentage decreases of 2.70% (20 days), 7.48% (30 days), and 11.71% (40 days) compared to immediate measurement after reconstitution. Statistical analysis using Repeated Measures ANOVA and Pairwise Comparisons indicated a significant effect of storage on Alanine Aminotransferase enzyme activity after storage at -20°C , with average decreases of 1.07 U/L (20 days), 2.94 U/L (30 days), and 4.58 U/L (40 days).

Conclusion: There is an effect of storing reconstituted commercial lyophilized control serum at -20°C on the activity of the enzyme Alanine Aminotransferase (ALT).

Keywords: Storage Duration, Control Material, Alanine Aminotransferase (ALT)
Enzyme Activity