

ABSTRACT

Background: Urea level examination is a blood chemistry parameter in the laboratory that serves to establish the diagnosis of acute kidney failure, assess kidney function, and evaluate the progression of kidney disease. Inappropriate blood sample processing, such as delayed centrifugation, can alter blood components and affect the accuracy of results. Delays in sample processing in hospitals often occur due to the long distance between the treatment room and the laboratory, equipment damage, and a large number of samples, which can impact patient diagnosis and treatment.

Objective: This study aimed to determine the difference in urea levels in blood samples stored in lithium heparin tubes that were immediately centrifuged and those delayed for 3 hours.

Method: The research method applied was pre-experimental with a One Group Pretest-Posttest Design. Blood samples were collected from 30 respondents. A total of 60 urea level data obtained were then analyzed descriptively, statistically, and in accordance with Clinical Laboratory Improvement Amendments (CLIA) regulations.

Results: The results showed an increase in urea levels in samples with delayed centrifugation for 3 hours (average 31.92 mg/dL) compared to samples processed immediately (average 25.16 mg/dL). This difference showed statistical significance as proven by the Paired Sample T-Test ($p = 0.000$; $p < 0.05$). CLIA analysis yielded a result of $(-0.269 \geq 9)\%$ which means that the increase in blood urea levels in lithium heparin tubes that experienced a 3-hour centrifugation delay was not clinically significant.

Conclusion: There was a significant difference in urea levels, with blood samples delayed for 3 hours before centrifugation showing higher levels than those processed immediately.

Keywords: Urea, Lithium Heparin, Delayed Centrifugation

ABSTRAK

Latar Belakang : Pemeriksaan kadar ureum adalah parameter kimia darah di laboratorium yang berfungsi dalam penegakan diagnosis gagal ginjal akut, penilaian fungsi ginjal, serta evaluasi progresivitas penyakit ginjal. Pengolahan sampel darah yang tidak sesuai seperti penundaan sentrifugasi dapat mengubah komponen darah dan mempengaruhi akurasi hasil. Penundaan pengolahan sampel di rumah sakit sering terjadi akibat jarak antara ruang perawatan dan laboratorium yang jauh, kerusakan alat dan sampel yang banyak sehingga dapat berdampak pada diagnosis dan pengobatan pasien.

Tujuan : Penelitian ini bertujuan untuk mengetahui perbedaan kadar ureum dalam sampel darah yang disimpan dalam tabung lithium heparin yang segera disentrifugasi dan ditunda selama 3 jam.

Metode : Metode penelitian yang diterapkan adalah *pre-experimental* dengan rancangan *One Group Pretest-Posttest Design*. Sampel darah diambil dari 30 responden. Sebanyak 60 data kadar ureum yang diperoleh kemudian dianalisis secara deskriptif, statistik, dan sesuai dengan aturan *Clinical Laboratory Improvement Amendments (CLIA)*.

Hasil : Hasil penelitian menunjukkan terjadi kenaikan kadar ureum pada sampel yang ditunda sentrifugasinya selama 3 jam (rata-rata 31.92 mg/dL) dibandingkan dengan sampel yang segera diproses (rata-rata 25.16 mg/dL). Perbedaan ini menunjukkan signifikansi statistik dibuktikan oleh uji *Paired Sample T-Test* ($p = 0,000$; $p < 0,05$). Analisis CLIA didapat hasil $(-0,269 \geq 9)$ % yang artinya peningkatan kadar ureum darah pada tabung lithium heparin yang mengalami penundaan sentrifugasi selama 3 jam tidak bermakna secara klinis.

Kesimpulan : Terdapat perbedaan yang signifikan kadar ureum yaitu pada darah yang di tunda sentrifugasinya selama 3 jam lebih tinggi daripada yang segera diperiksa.

Kata Kunci : Ureum, Lithium Heparin, Penundaan Sentrifugasi