

ABSTRACT

Background: Uric acid testing is an important parameter in clinical chemistry that requires quality assurance through Quality Control (QC) to ensure accuracy and precision. In laboratory practice, the use of half-dose reagents is common for efficiency, but it has the potential to affect the accuracy and precision of patient test results.

Objective: To compare uric acid test QC results using of control materials and full-dose versus half-dose reagents from descriptive, clinical, and statistical perspective.

Methods: A true experimental study with a posttest-only control design yielded 120 data points collected within-day during preliminary period and day-to-day during control period using a Photometer 5010 V5+. Data were analyzed using mean, SD, CV, bias, total error (TE), sigma, Levey-Jennings plots, and the Mann-Whitney U statistical test.

Result: The results of the descriptive analysis, which included precision (CV), accuracy (bias), and total error (TE) for both methods, were classified as good because they were below the maximum limits; however, the QC results for half-dose uric acid tended to be higher. The six-sigma obtained was more adequate for a full dose compared to a half dose; however, no violations of the Westgard rules were found on the Levey-Jennings plot. Clinically, the results are still acceptable because the TE is below the TEa according to CLIA, which is 10%. Statistically, there is a difference between the two methods.

Conclusion: QC results for both full-dose and half-dose uric acid tests are classified as good and remain below the maximum limit, although the results for the half-dose test tend to be higher. Clinically, the results are still acceptable; however, statistically, there is a difference between the use of a full dose and a half dose.

Keywords: Quality Control (QC), uric acid, control materials, reagents.

ABSTRAK

Latar Belakang: Pemeriksaan asam urat merupakan parameter penting dalam kimia klinik yang memerlukan jaminan mutu melalui *Quality Control* (QC) untuk menjamin akurasi dan presisi. Dalam praktik laboratorium, penggunaan reagen setengah resep sering dilakukan untuk efisiensi, namun berpotensi mempengaruhi akurasi dan presisi hasil pemeriksaan pasien.

Tujuan: Mengetahui perbedaan hasil QC pemeriksaan asam urat antara penggunaan bahan kontrol dan reagen satu resep dengan setengah resep secara deskriptif, klinis, dan statistik.

Metode: Penelitian *true experimental* dengan *posttest-only control design*, didapatkan 120 data yang diperoleh secara *within day* untuk periode pendahuluan dan *day to day* untuk periode kontrol menggunakan Photometer 5010 V5+. Analisis hasil meliputi *mean*, SD, CV, bias, *total error* (TE), sigma, grafik *Levey-Jennings*, serta uji statistik *Mann-Whitney U*.

Hasil: Hasil analisis deskriptif yang meliputi presisi (CV), akurasi, (bias), dan *total error* (TE) pada kedua metode tergolong baik karena berada dibawah batas maksimum, namun hasil QC asam urat setengah resep cenderung lebih tinggi. *Six sigma* yang diperoleh lebih memadai pada satu resep dibandingkan dengan setengah resep, namun tidak ditemukan pelanggaran aturan *Westgard* pada grafik *Levey Jennings*. Secara klinis hasil masih diterima karena TE berada dibawah TEa menurut CLIA yaitu 10%. Secara statistik terdapat perbedaan antara kedua metode.

Kesimpulan: Hasil QC pemeriksaan asam urat satu resep maupun setengah resep tergolong baik dan masih di bawah batas maksimum, meskipun hasil pada setengah resep cenderung lebih tinggi. Secara klinis hasil masih dapat diterima, namun secara statistik terdapat perbedaan antara penggunaan satu resep dan setengah resep.

Kata Kunci: *Quality Control* (QC), asam urat, bahan kontrol, reagen.