

ABSTRACT

Background: According to RSUD Panembahan Senopati's policy, serum samples are stored for 7 days at 2-8°C for additional testing, sample tracing, and retesting. One such clinical test is total protein, which is used to diagnose liver and kidney dysfunction. Serum is stored in primary tubes or serum separator tubes (SST). However, some previous studies have shown that gels can affect the concentration and stability of analytes.

Objective: To determine that serum stored in serum separator tubes for 7 days at 2-8°C can be used for total protein assay.

Methods: This study was a pre-experimental study with a one-group pretest-posttest design. In this study, serum storage in serum separator tubes was tested immediately and tested after 7 days of storage at 2-8°C. Total protein levels were measured with the Biolis 50i Superior.

Results: Average total protein levels examined immediately and stored for 7 days at 2-8°C temperature of 7.09 gr/dL and 7.13 gr/dL. Statistically, there was no either difference of total protein levels in serum separator tube (SST) which was examined immediately and stored for 7 days at 2-8°C. In addition, the mean difference percentage of -0.57%, CI 95% lower of -1.12% and upper of 0.05% is within the limits of total allowable error $\pm 8\%$ of CLIA (2022) and desirable bias of 1.36% from Westgard (2014).

Conclusion: Thus, serum stored in serum separator tube (SST) for 7 days at 2-8°C can be used for total protein content examination.

Keywords: Serum, storage, serum separator tube, total protein.

ABSTRAK

Latar Belakang: Berdasarkan kebijakan di RSUD Panembahan Senopati, sampel serum disimpan selama 7 hari pada suhu 2-8°C untuk mengantisipasi adanya pemeriksaan tambahan, *tracking sampel*, dan pengulangan pemeriksaan. Salah satu pemeriksaan klinik tersebut adalah protein total yang digunakan membantu diagnosis gangguan fungsi hati dan ginjal. Serum tersebut disimpan dalam tabung primernya, yaitu *serum separator tube* (SST). Akan tetapi, beberapa penelitian sebelumnya menunjukkan bahwa gel dapat mempengaruhi konsentrasi dan stabilitas analit.

Tujuan: Untuk mengetahui bahwa serum yang disimpan dalam tabung *serum separator* selama 7 hari pada suhu 2-8 °C boleh digunakan untuk pemeriksaan kadar protein total.

Metode: Penelitian ini merupakan *pre-experimental* dengan desain penelitian *one group pretest-posttest design*. Perlakuan dalam penelitian ini adalah penyimpanan serum dalam tabung *serum separator tube* yang diperiksa segera dan diperiksa setelah disimpan 7 hari pada suhu 2-8°C. Kadar protein total tersebut diukur dengan alat Biolis 50i Superior.

Hasil: Rata-rata kadar protein total yang diperiksa segera dan disimpan 7 hari suhu 2-8°C sebesar 7,09 gr/dL dan 7,13 gr/dL. Secara statistik tidak ada perbedaan kadar protein total dalam *serum separator tube* (SST) yang diperiksa segera dengan disimpan 7 hari pada suhu 2-8°C. Selain itu, persentase *mean difference* sebesar -0,57%, CI 95 % *lower* sebesar -1,12% dan *upper* sebesar 0,05% masuk dalam batas *total allowable error* ±8 % dari CLIA (2022) dan *desirable bias* 1.36% dari Westgard (2014).

Kesimpulan: Dengan demikian, serum yang disimpan dalam *serum separator tube* (SST) selama 7 hari pada suhu 2-8°C boleh digunakan untuk pemeriksaan kadar protein total.

Kata Kunci: Serum, penyimpanan, *serum separator tube*, protein total.