

Clinical Medicine

Poster

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## Effects of Serum Stored at Various Temperature and Freeze-Thaw Cycles on Selected Biochemical Parameters

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**Introduction:** Preanalytical variation as a result of sample storage conditions are common issues in a large scale study since the sample has to be kept for an extended duration at ultra low temperature (-70°C) before analysis. However, ultra low freezers may not be available in some laboratories. Sometimes, the laboratory test may need to be repeated on the previously frozen and thawed samples. The aim of this research was to study the effect of storage temperature and freeze-thaw cycles on some biochemical parameters in our laboratory. **Methods:** An experimental study was carried out on 50 volunteers. Serum were aliquoted and stored at 4°C, -30°C and -70°C. The serum was analyzed for total cholesterol (TC), triglycerides (TG), high density-lipoprotein (HDL-C) and glucose after 3 months of storage. The effects of freeze-thaw cycles were also recorded. **Results:** No significant differences ( $p>0.05$ ) were seen in the level of the biochemical parameters between the samples stored at -70°C and at -30°C. The levels of selected parameters were higher after second freeze-thaw cycles as compared to the first thaw. All parameters showed significant positive correlations between the samples stored at -70°C and the samples stored at -30°C and 4°C as well as between the first and second freeze-thaw cycles in samples kept at both -70°C and -30°C. **Conclusions:** Our finding suggested that the level of TC, TG and glucose in sample stored for 3 months at -70°C are comparable with the samples stored at -30°C. Only one freeze-thaw cycle is acceptable.

**KEYWORDS:** Serum storage, temperature, freeze-thaw cycle