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Long-term stability of parameters of antioxidant status in human serum.

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Abstract

The antioxidant status of serum or plasma can be determined using several commercially available assays. Here, four different assays, total antioxidant status (TAS), its second-generation assay (TAS2), biological antioxidant potential (BAP), and enzymatic assay using horseradish peroxidase (EAOC), were applied on human serum samples to test the temperature stability of antioxidants, upon storage of serum for 12 months. The two or three most commonly used temperatures for storage, that is, - 20, - 70 (or - 80), and - 196°C, were selected. The general conclusion is that all assays were stable at the temperatures tested. In addition, there were almost no statistically significant differences between the samples stored at different temperatures. Only the rank order of the EAOC assay was not very good in samples stored at - 20°C. Also three components contributing to the total antioxidant capacity, uric acid, creatinine and bilirubin, showed no statistically significant differences between the temperatures. Therefore, storage at - 20°C is sufficient to maintain a proper assay outcome of most of the total antioxidant assays, although storage at - 70/80°C is to be preferred for longer storage times.