



A139 Efficacy of Organic Osmolytes in the Preservation of Biological Samples for Forensic DNA Analysis

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After attending this presentation, attendees will have knowledge on chemical reagents that can be used to stabilize biological evidence samples for long term storage.

This presentation will impact the forensic science community by providing information on biochemical reagents that can be used to stabilize biological samples for long term storage.

Storage of biological evidence requires expensive equipment including security systems, environmental control systems, freezers, and dehumidifiers. If effective preservatives could be added to the biological evidence, the cost to store the evidence could be reduced. In addition, trace biological evidence could be stored indefinitely awaiting future more sophisticated tests. Osmolytes are naturally produced by organisms that have adapted to extreme conditions such as high temperature, low humidity, and high salinity. These compounds have previously been shown to increase the thermal stability of proteins under stressful conditions. The effect of osmolytes on the long term storage of DNA in biological samples was investigated in the present study. To assess the ability of osmolytes to improve the storage of DNA from biological samples, osmolytes (e.g., trehalose, sorbitol, myo-inositol, taurine, and hypotaurine) were incubated with samples (blood, saliva, and DNA) for four to six months under extreme environmental conditions (e.g., high temperature and humidity). DNA extracted from these samples was analyzed by STR analysis. Osmolytes (polyols, specifically trehalose and myo-inositol) were found to protect DNA from oxidative damage. It is concluded that osmolytes may be used to protect biological samples for long term storage for forensic DNA analysis.

Osmolytes, DNA, Preservation