# Optimized Room Temperature Human Cadaveric Tissue Preservation for DNA Extraction

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Sample storage and preservation is an important issue in the overall molecular identification process, based on DNA typing. Accordingly, the development of paper-based media for blood sample collection and storage simplified blood sampling strategies, reducing the chance of experimental error and the environmental contamination by organic solvents and other hazardous reagents. Instead, cadaveric tissue preservation is mostly a neglected problem in forensic science, since low temperature warrants long-term preservation of any kind of tissues. Nevertheless, some situations may require particular attention, as in cases of exhumations and battlefield corpses or fragmentary victims of mass disaster sample remains collection and storage. Besides cryopreservation, some attempts were made using other media for this purpose, such as solid EDTA, silica gel, and diverse sodium salts. Sodium salts are well know as effective cadaveric tissue preservatives having being successfully used for mummification in the Antique Egypt when natrum was used for this purpose. In order to evaluate the capability of sodium chloride to preserve cadaveric tissues a set of experiments were designed. They included a) kinetic evaluation of DNA degradation of salt preserved cadaveric tissue samples and b) the ability of sodium chloride to retrieve DNA from decomposed cadaveric tissues allowed to putrefy for different periods of time. In both cases a six-month time span was considered.
This investigation was carried out under semi-sterile conditions in order to evaluate the effect of the preservative on the cadaveric tissue, solely exposed to endogenous degradative processes, reducing the possible effects that the environment may play on this complex process. The kinetic evaluation showed that the samples preserved in sodium chloride for up to six month were able to be typed with the 15 STRs and amelogenin gene included in the PowerPlex 16 kit. Instead, when samples were allowed to putrefy for different time periods before sodium chloride addition, some STR loci were able to be typed mainly: amelogenin, vWA and FGA, however clear stochastic amplification effects were detected in the above mentioned markers as well with others such as: THO-1, D7S820, D16S539 and Penta E. This works underscore the efficiency of the sodium chloride as a cadaveric tissue preservative agent.