

## Assessment of DNA Degradation Using Comet Assay: A Versatile Technique for Forensic Application

**Authors :** Ritesh K. Shukla

**Abstract :** Degradation of biological samples in terms of macromolecules (DNA, RNA, and protein) are the major challenges in the forensic investigation which misleads the result interpretation. Currently, there are no precise methods available to circumvent this problem. Therefore, at the preliminary level, some methods are urgently needed to solve this issue. In this order, Comet assay is one of the most versatile, rapid and sensitive molecular biology technique to assess the DNA degradation. This technique helps to assess DNA degradation even at very low amount of sample. Moreover, the expedient part of this method does not require any additional process of DNA extraction and isolation during DNA degradation assessment. Samples directly embedded on agarose pre-coated microscopic slide and electrophoresis perform on the same slide after lysis step. After electrophoresis microscopic slide stained by DNA binding dye and observed under fluorescent microscope equipped with Komet software. With the help of this technique extent of DNA degradation can be assessed which can help to screen the sample before DNA fingerprinting, whether it is appropriate for DNA analysis or not. This technique not only helps to assess degradation of DNA but many other challenges in forensic investigation such as time since deposition estimation of biological fluids, repair of genetic material from degraded biological sample and early time since death estimation could also be resolved. With the help of this study, an attempt was made to explore the application of well-known molecular biology technique that is Comet assay in the field of forensic science. This assay will open avenue in the field of forensic research and development.

**Keywords :** comet assay, DNA degradation, forensic, molecular biology

**Conference Title :** ICFS 2018 : International Conference on Forensic Sciences

**Conference Location :** London, United Kingdom

**Conference Dates :** June 28-29, 2018