

Teeth as a Source of Information for Forensic Science

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Research is currently being initiated at the School of Science, University of the West of Scotland in the above area, with particular reference to forensic age determination and metal profiling analysis. A University funded Ph.D. student is currently assessing the potential of analytical techniques when applied to age determination of teeth (chromatography of amino acids and X-ray analysis of layer thickness). The project involves input from chemistry and physics researchers at the University in collaboration with the Glasgow Dental School.

Teeth are the hardest structures in the human body, being preserved much longer than soft tissues and bones, while being least affected by mutilation, extreme temperatures and environmental factors, commonly associated with long post mortem intervals.

Comparison of ante and post mortem dental records is the method of choice for the identification of unknown remains. However the degree of accuracy attained by comparative identification through ante and post mortem dental records is only as reliable as the dental records permit.

Age estimation of teeth from unknown individuals gives investigators some information which decreases the sample population. The estimates of age can be accurately applied to archaeological samples, isolated teeth, as well as living, deceased or long post mortem individuals making the approach suitable to a wide range of applications.

Here the research has two strands, the first looking at racemisation of amino acids as an estimation of age aims to improve on published methods particularly in terms of accurate determination and extraction of amino acids from the tooth matrix. The comparison technique, X-ray analysis, has obvious advantages in particular the non destructive nature of the technique and potential application where non destructive analysis is essential (eg archaeology).

Metals found in the body may have dietary and/or environmental causes and analysis may help to indicate exposure to particular metals or geographical information which may assist forensic investigations of unknown individuals.