

Identifying a person through dental calculus

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POSTER PRESENTATION

J Forensic Odontostomatol
2017 Nov 1; Supp1(35): 129
ISSN :2219-6749

ABSTRACT

Background: Dental calculus is a microbial film consisting of dietary components, oral microorganisms and host secretions. It acquires human DNA from saliva and gingival crevicular fluid. The reasons for selecting dental calculus as a DNA reservoir are: abundant quantity in oral cavity, rich DNA content, densely mineralised and ability to withstand environmental contamination.

Aim: To establish the identity of person from DNA present in the dental calculus.

Material & Methods: In this pilot study, twenty subjects were selected on the basis on pre-determined inclusion and exclusion criteria. After taking institutional ethical clearance and informed written consent, samples of dental calculus were collected from the thickest portions of calculus deposited on the lingual surface of mandibular incisors. Nuclear DNA was extracted from samples of dental calculus and amplified using Polymerase Chain reaction. Gel electrophoresis was done to find out how many repeats of Short Tandem Repeat sequences exist which were then used to create genetic fingerprint of an individual.

Results: This study included twelve males and eight females with mean age of thirty years. Results of DNA quantification varied from 22µg/ml to 37.8µg/ml. Genetic fingerprint were created for all the participants.

Conclusion: Genetic fingerprinting created from DNA found in dental calculus can serve as a unique personal identification tool in forensic investigations.