

FORENSIC LITERATURE THESIS

LITERATURE THESIS

Title:	<i>Forensic and Archeological prove from alternative matrices hair, nail, bone and teeth</i>
Keywords:	<i>bone, nails, hair, intoxication, DFSA</i>
Forensic Expertise Area:	<i>forensic toxicology</i>
Department:	<i>Researchgroup Analysis techniques in the life sciences</i>
Institute/Company:	<i>Avans university of Applied Sciences</i>
Supervisor:	<i>Dr. B.M. De Rooij (Ben)</i>
Email address:	<i>bm.derooij@avans.nl</i>
Telephone number:	<i>06 1023 1886</i>
UVA Co-assessor:	<i>Arian van Asten</i>
UVA Coordinator:	<i>Arian van Asten/Yorike Hartman</i>

SHORT DESCRIPTION

In forensic and archeological cases remains of human bodies are frequently found. As in the decay process the softer tissues are degraded relatively fast, the harder tissues, i.e. teeth, bones, nails and hair, may remain for longer time and sometime for extremely long periods. Determination of components in these matrices can give information on the circumstances before death. The use of hair material as matrix in forensic and archeological investigations is relatively well known. The use of teeth, bone and nail material for this purpose is more fragmentaric. In some studies attempts were made to make a comparison between one or more of the harder matrices with hair or soft tissue measurements.

AIM: The purpose of this literature thesis is to explore the use of harder materials such as teeth, bone (bone and bone marrow) and nails in forensic toxicology. A second goal would be the comparison of the harder materials with hair and soft tissue measurements where available. An important aspect of the thesis would be the description of the harder tissues and their formation. For instance bone consists of bone and (yellow or red) bone marrow. The bone marrow is an innervated tissue and takes part in the post mortem redistribution process, while teeth, bone and nails do not.

REFERENCES

- 1) Baumgartner M.R. (2014) Nails: An adequate alternative matrix in forensic toxicology for drug analysis? (editorial) *Bioanalysis* 6, 2189-2191.

- 2) Cartiser N, Bevalot F, Fanton L, Gaillard Y, Guitton J. (2011) State-of-the-art of bone marrow analysis in forensic toxicology: A review. *Int. J. Legal Med.* 125, 181-198.
- 3) Kintz P, Salomone A, Vincenti M. (Eds) (2015) *Hair analysis in Clinical and Forensic Toxicology*. Elsevier 1st Edition.
- 4) Rubin K.M. (2018) The current state and future directions of skeletal toxicology: Forensic and humanitarian implications of a proposed model for the in vivo incorporation of drugs into the human skeleton. *Forensic Sc. Int.* 289, 419-428.
- 5) Klima M, Altenburger M.J, Kempf J, Auswarter V, Neukamm M.A. (2016) Determination of medicinal and illicit drugs in post mortem dental hard tissues and comparison with analytical results for body fluids and hair samples. *Forensic Sc. Int.* 265, 166-171.

REQUIRED/RECOMMENDED EXPERTISE

- Basic knowledge on anatomy and physiology
- Basic knowledge on forensic toxicology (toxins, medicines, metabolites)