ON ABO BLOOD GROUPING BASED ON TOOTH MATERIAL

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Abstract

The ABO blood grouping compounds are relatively stable and therefore detectable from the tooth material, which is protected from adverse environmental conditions over extended periods of time. Even when used as combinations of multiple variants, the identification power of blood grouping is modest in comparison with the DNA analysis, which shows lower rates of false positives and lower probabilities of erroneous matching by chance. However, the important matters of cost, availability and thermal stability make the ABO blood grouping attractive for identification purposes, particularly for cases where clinical simplicity is necessary, where the background information makes it useful (e.g. identification requires comparison between known ABO blood groups of accident victims), serious decomposition or charring has occurred, and as backup (quality control) for other methods of identification. Here the different methods of ABO blood grouping are compared for their performance in practical use.

1. Introduction

Identification of victims of serious accidents and crime, as well as clarification of familial relationship remain prime objects for forensic analysis. Recently a variety of new biochemical techniques has become available for forensic analysis. The technique with a particular impact has been the DNA analysis, because of its small sampling requirements and high power of identification (low probability of matching by chance). Since the DNA analysis is relatively new, it is however not widely utilised everywhere, nor are the methods and applications developed to a stage of internationally standardised procedures. It is not necessarily always the cost effective route, not only because of the direct cost but also for example when no material of comparison exists for matching. The classical biochemical forensic tools such as ABO blood grouping continue to be viable alternatives and complements. They also provide the necessary methods of comparison, when quality control is needed e.g. in cases of exchanged or contaminated samples.

Whether these other methods also are cost effective and realistic alternatives, apparently can depend on the case dependent practicality including local availability. Certain main principles, however, are the same for any method of identification:
- for good identification power, variable but common markers are needed; and
- the method should provide low rates of false positives and false negatives in the elementary identification of the markers.