

ASSESSMENT OF DNA EXTRACTION METHODS FOR FORENSIC WILDLIFE APPLICATIONS

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A number of DNA extraction methods were assessed for their suitability for forensic DNA applications in investigations of wildlife offences. Five different techniques were tested. Three of these methods were commercial kits: 1) Qiagen DNeasy™ kit (QG), 2) Roche-DNA isolation from blood/bone marrow/tissue kit (RH) and 3) LabSystems-Kingfisher™ kit (KF). Kits 2 and 3 were used with the automated Kingfisher™ workstation. In addition to these kits, methods using: 4) phenol/chloroform (PC) and 5) a guanidine iso-thiocyanate/silica method (GI) were also tested. These five methods were compared on the basis of effectiveness (in extracting DNA from muscle, blood, bone, antler and hair), speed and cost. When compared for efficiency; GI>PC>QG>KF>RH. The Roche kit was so ineffective that it was not suitable for forensic work and testing on this kit was discontinued. When the speed of the methods were compared: KF>GI>QG>PC. Comparison of cost gave the following results: (least expensive to most expensive): GI=PC>QG>KF. When all of the results were considered, the guanidine iso-thiocyanate/silica method was found to be the most suitable for forensic wildlife casework due to its high efficiency, low cost and acceptable speed. Because of its rapid speed, the Kingfisher™ LabSystems kit was also found to be quite useful for the extraction of database samples.