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OPTIMIZATION OF ISOLATION AND AMPLIFICATION OF DNA FROM DEGRADED TISSUES

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During casework in the past with samples of human and animal origin we found that it was very difficult to judge whether or not the sample was still suited for DNA extraction. Especially when tissue was stored for longer periods of time in humid or warm conditions success rate was low. For optimization of DNA extraction methods and following PCR reactions we set up the following study: To determine degradation of DNA under defined conditions muscle tissue, heart tissue and bones from freshly slaughtered swines was incubated for several weeks at 37°C and 22°C. Samples were incubated 1) at dry conditions, 2) in water and 3) in water with garden mold. At different timepoints between 1 and 12 weeks after start of the experiment DNA was extracted from samples with different commercially available DNA extraction kits. Quality and quantity of extracted DNA was judged by Agarose gel electrophoresis, PCR and RealTime PCR. By PCR and RealTime PCR both, nuclear and mitochondrial genes were amplified. We could show that, even after several weeks of tissue incubation under adversarial conditions our adapted DNA extraction methods resulted in sufficient DNA for PCR and RealTime PCR. With this DNA nuclear and mitochondrial genes up to 1200 bp could be amplified by PCR.