

Post-mortem interval estimation in dogs: hepatic ribonucleic acids purity and concentration profile

ABSTRACT

Introduction: Veterinary forensic pathology being a relatively new discipline requires a rapid development of basic techniques and resource information for field use. The age-old methods used in routine veterinary pathology involving gross post-mortem changes for post-mortem interval estimation need a revamp to provide non-biased forensic evidence/opinion in courts of law. Hence, there is a need for a standard scientific approach that is repeatable, easily validated, and transferrable for third party opinion. Ribonucleic acids assays and expression have become an integral part of molecular forensic medicine but is yet to be well appreciated in veterinary forensics. Objective: Ribonucleic acids are rapidly degraded by ubiquitous endonucleases immediately after organismal death; the product of such degradation may be suggestive of post-mortem interval. Assessing the basic post-mortem spectrophotometric characteristics of ribonucleic acids as it relates to post-mortem interval in dogs in natural environmental conditions in Malaysia was the objective of this research. Design: Ribonucleic acids are extracted from canine liver and subjected to spectrophotometric analysis for purity and concentration to correlate findings with post-mortem interval. Materials and methods: Four adult bitches were obtained from the city dog pound and humanely put to sleep using injectable anaesthetic. Ribonucleic acid from liver samples were extracted and eluted following Qiagen® RNA extraction kit. Purity and concentration of eluted RNA were obtained via spectrophotometer and data presented descriptively. Result: Hepatic RNA from four euthanized adult bitches was successfully extracted up to the fortieth hour post-mortem to spectrophotometry. Data for purity and concentration of the extracted RNA are presented descriptively and did not correlate with the progression of time lapse since death. Conclusion: Ribonucleic acids from the RNA can be extracted up to 40 hours post-mortem but the purity and concentration values do not provide reliable estimate of the post-mortem interval as we earlier hypothesized. Further research on expression analysis of these RNA molecules may provide more insight on the relationship between ribonucleic acid degradation and post-mortem interval in dogs.

Keyword: Ribonucleic acid; Post-mortem interval; Dogs; Hepatic