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WILDLIFE SPECIES IDENTIFICATION BY MITOCHONDRIAL DNA AND HAIR ANALYSIS

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Animal trafficking, smuggling and illegal trade together are the fourth most common illegal activity in the world, increasing the risk of extinction of several endangered species. An important point concerning illegal animal trade and increasing globalization is that they represent a possible vehicle for illness spreading, including zoonosis, creating a health public issue. The aim of this research is to identify species from the wildlife by mitochondrial DNA (mtDNA) and hair. Samples were collected from blood, muscle and skin from trafficked animals in the Brazilian territory. A preserved region from mtDNA (600 base pair) was sequenced and compared to the Barcode of Life Database (BOLD) in order to do the genetic identification. Hair identification was complete using the pictures obtained from microscopic by compared analysis of reference material and atlas about animal hair identification. The following species were identified using mtDNA sequencing Dasypus sp., *Mazama gouazoubira, Panthera onca, Cerdocyon thous, Tamandua tetradactyla, Didelphis aurita, Puma concolor, Myoprocta sp., Cavia sp., Galictis cuja, while Alouatta* sp., *Ozotoceros bezoarticus, Sylvilagus brasiliensis, Didelphis albiventris, Panthera onca, Puma concolor, Myrmecophaga tridactyla, Leopardus tigrinus* and *Dasyprocta* sp. were identified by hair morphology analysis. The identification could be effective because of its association between forensic genetic and trichology techniques.

Figure 1: Optical microscopy hair of a brown howler monkey (*Alouatta guariba*). 1. Overall diameter; 2. Medulla diameter; 3. Cuticle overall distance and diameter/medulla diameter (400x).

Recent Publications

1. **Tremori T M, Garcia F M M, Flórez L M M, Gonçalves B P, Camargo B W D F,et al. (2018) Hair analysis of mammals of brazilian wildlife for forensic purposes. Open Journal of Animal Sciences 8(03):335.**
2. **Pozebon D, Scheffler G L and Dressler V L (2017) Elemental hair analysis: A review of procedures and applications. Anal Chim Acta. 992.**
3. **Yates B C, Espinoza E O and Baker B W (2010) Forensic species identification of elephant (Elephantidae) and giraffe (Giraffidae) tail hair using light microscopy. Forensic Sci Med Pathol. 6(3):165–71.**
4. **Alacs E A, Georges A, Fitz Simmons N N and Robertson J (2010) DNA detective: A review of molecular approaches to wildlife forensics. Forensic Sci Med Pathol. 6(3):180–94.**
5. **Karlsson A O and Holmlund G (2007) Identification of mammal species using species-specific DNA pyrosequencing. Forensic Sci Int. 173(1):16–20.**

Biography

Talia M Tremori has her expertise in Veterinary Medicine, Animal Pathology applied to Forensic Sciences. Bechelor's degree in Veterinary Medicine, master's degree in Animal Pathology (Sao Paulo State University, Campus of Botucatu, Brazil) doctor's degree in Veterinary Preventive Medicine (Sao Paulo State University, Campus of Botucatu, Brazil) and Health and Development on the tropics (University of Salamanca, Spain), researching criminal identification of animals coming from trafficking and its impact on public health. She integrates the "Pro Forenses" Project (CAPES–Brazil), WAWFE (Worldwide Association of Women Forensics Experts) and "Association Ibero american of Medicine and Forensic Veterinary Sciencess". She has participated in many events in Brazil and abroad in Forensic Veterinary Medicine, Animal Science and Forensic Sciences.

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