v. 3, n. 10, 2023

International Journal of Biological and Natural Sciences

DETECTION OF HUMAN BLOOD WITH DOGS IN SUPPORT OF EXPERT EXAMINATIONS: CASE REPORT

Machado, J.H.O
Superintendence of the Technical-Scientific Police, IC/NPC - SJC, São José dos Campos, São Paulo

Yamasaki, L.H.T
Superintendência da Polícia Técnico-Científica, IC/NBB, São Paulo, São Paulo

Pollito, L.G.L.F

Arneiro, E.R.B

Cançado, F.C
Superintendência da Polícia Técnico-Científica, IC/NBB, São Paulo, São Paulo

Garcez, S.L.R
Superintendence of the Technical-Scientific Police, IC/NPC - SJC, São José dos Campos, São Paulo

Keywords: Biodetection, Forensic Odorology

INTRODUCTION

Scientific Police from several countries have been using human blood detection dogs in forensic examinations of crime scenes as an auxiliary tool. The São Paulo Scientific Police has a research line where a human blood detection dog has been trained to support forensics since 2020.

GOALS

Demonstrate that trained dogs are potential tools in forensic examinations of locations to detect traces, specifically latent and/or adulterated bloodstains.

METHODS

Case report: A corpse with signs of violence was found on a highway, and the initial investigation pointed to a residence as a possible homicide site. The property showed signs of recent cleaning. One of the suspects lived in a house close to the suspected property. Initially, the dog was used to sweep the two properties. When the animal showed positive signaling at some point, the chemiluminescence reagent (Luminol®) was applied to the marking region and nearby areas. Spots that showed fluorescence were collected and submitted to the immunochromatotest for human blood (Feca cult®). Samples positive for Luminol® were sent for genetic profile analysis at NBB together with the reference sample collected from the victim.

RESULTS AND DISCUSSION

In the first property the dog tested positive for 7 points, and in the second property the dog tested positive for 2 points. All points showed a reaction to Luminol®. Four points in the first residence and one in the second were positive for human blood in Feca-cult®. In total, 9 questioned samples and one reference were subjected to genetic profile analysis. Of the samples questioned, genetic profiles were obtained from 2. A sample collected in the first property showed a genetic profile compatible with the victim and another sample collected in the second property resulted in a male profile that was different from the victim. The remaining samples showed a lack of DNA. This case demonstrates that the effectiveness of detecting the dog was similar to that of Luminol®, but with a great advantage in time and reagents spent: the entire scan in the first residence was carried out in 16 minutes, in the second in 3 minutes and a Luminol® kit. It is estimated that for scanning without the dog we would use 3 to 5 times more time and 5 to 10 times more reagents. Samples with insufficient DNA quantification may be due to the dog's high sensitivity or contaminating material from the cleaning process, which may have interfered with the DNA extraction stage.

CONCLUSION

The use of human blood detection dogs in forensic examinations saves time and reagents and there is no evidence of negative interference in genetic profile analyses.

REFERENCES

L. Rust et al. Investigating the detection limits of scent-detection dogs to residual blood odour on clothing. Forensic Chemistry 9 (2018) 62–75 (https://doi.org/10.1016/j.forc.2018.05.002 2468-1709). Clothing. Forensic Chemistry 9 (2018) 62–75 (https://doi.org/10.1016/j.forc.2018.05.002 2468-1709).