

Arthropod uses in Detecting Narcotic Abuse

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Short Communication

The use of insects regarding the analysis of drugs and poisons within a corpse is a topic of which is still undergoing much debate as, although it is regarded as being a useful tool in the area of forensics, it is questionable how far it can be applied in a forensic investigation [1]. This paper critically examines the arguments for against the use of maggots to test concentration of substances found in the corpse and focuses around research involving the controversy between Campobasso, et al, [2] and Tracqui, et al, [3].

Firstly, early research by Nuorteva and Hasamen [4] and Nuorteva [5] brings to light that different chemicals may be observable in insects of which can then be applied to forensic investigation to provide details and evidence within the case. Nuorteva and Hasamen [4] claimed that, depending on the contamination level, if maggots were feeding on fish that were contaminated by mercury, the maggots feeding would also accumulate mercury. Following this, Nuorteva [5] applied this to a case study of which involved recovering Larval, pupal and adult samples of *Protophormia terraenovae* (Robineau-Desvoidy, 1830) of which were measured for mercury content, from a corpse of a murdered girl. Results showed that mercury levels in the flies suggested that the girl was from an area of low levels of mercury pollution of which it was later confirmed that she was. This study is therefore a good indication of how insects may be used to confirm the presence and type of chemicals contained in a corpse.

Despite that the indication of chemicals contained within a corpse can be examined through the larvae feeding on a corpse rather than the corpse itself, it is argued that for entomotoxicology to be regarded as forensically significant, the drug concentration of feeding maggots needs to be quantifiably measured of which many argue it cannot as there are too many variables involved that allow the direct correlation between the dosage of drugs in a corpse and the concentration levels in larvae, such as drugs having adverse effects on insects as it has on humans [6].

However, it can be argued that as such variables exist, such as the varied effects of the drugs on feeding larvae that inhibit the ability to quantify measurements, the requirement for entomotoxicology in forensic investigation is vital as if adverse effects are having an effect on the development of the larvae, the result of this can have major changes on PMI estimation (7). For example, some substances have been highlighted that affect the rate of development of larvae such as morphine Oxenham [1], This is supported in research by Campobasso, et al, [2] of which provides contrasting claims of that regarding the limited ability to measure the concentrations of drugs in feeding larvae and suggest that the concentration levels in maggots are dependent

upon the drug itself. Furthermore, Campobasso, et al [2] also provide data to suggest that the use of analysis of drug concentration in larvae can be useful in cases involving highly decayed bodies as larvae that were experimentally reared, showed higher concentration levels than that or actual human overdoses.

Despite research by Campobasso, et al, [2], Tracqui, et al, [3] completely disregard this and provide research that suggests that experiments that are conducted are not replicable and therefore indicates that data from such experiments is qualitative and cannot be applied to forensic investigation. furthermore, in contrast to research by Campobasso, et al, [2], Tracqui, et al. [3] claim that drug measurements of larvae relating to highly decayed corpses is limited as different variables such as temperature, humidity, exposure to UV-radiation can affect different drugs in the corpse over a period of time. Furthermore, the use of maggots as an indication of drugs in a corpse is also criticized as although positive results suggest drugs are present, negative results do not suggest that drugs are not present, only that the drug has not been ingested [1].

Although many variables are apparent when concerning the measurement and analysis of drug concentrations in maggots, qualitative application of this can still be a useful tool when concerning forensic investigation. Furthermore, the use of drug analysis of insects at a corpse cannot be ignored as vital information and evidence can be retrieved, such as the indication that drugs are present and the type of drug or drugs that are involved. Moreover, as certain drugs can have effects on the development of larvae of which in turn can have further effect PMI estimation, testing of concentration levels in maggots may be a significant way of gaining accurate information and evidence involving a forensic case and more research should be priority.

References

1. Oxenham M (2008) Forensic approaches to death disaster and abuse. Australia: Australian Academic Press.
2. Campobasso CP, Gherardi M, Caligara M, Sironi L, Introna F (2004) Drug analysis in blowfly larvae and in human tissues: A comparative study. *Int J Legal Med* 118: 210-214.
3. Tracqui A, Tracqui CK, Kintz P, Ludes B (2004) Entomotoxicology for the forensic toxicologist: Much ado about nothing? *Int J Legal Med* 118: 194-196.
4. Nuorteva P, Häsänen E (1972) Transfer of mercury from fishes to sarcosaprophagous flies. *Annales Zoologici Fennici* 9: 23-27.
5. Nuorteva P (1977) Sarcosaprophagous insects as forensic indicators.
6. Tedeschi CG, Eckert WG, Tedeschi LG (1977) Forensic medicine, a study in trauma and environmental hazards, Physical trauma. WB Saunders, Philadelphia 2: 1072-1095.
7. Bell S (2008) Crime and circumstance: Investigating the history of forensic science.