



# Pathology/Biology Section - 2015

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## H107 Entomotoxicology: The Past and Where to Go Next

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After attending this presentation, attendees will be aware of what research has been conducted within the field of entomotoxicology, the downside of this research, and the direction the research needs to take in the future.

This presentation will impact the forensic science community by taking a good look at the research that has been conducted thus far, the implications it gives, and how a thorough field study may change these implications.

Entomotoxicology focuses on the secession trends of blow flies and/or developmental effects and toxicology levels of the maggots feeding on the tissues. The current research within the field of entomotoxicology has been done in laboratory settings on maggots fed on treated liver or other food sources. The small amount of research accomplished with injecting pigs or rabbits with controlled substances prior to death still only focused on feeding the liver to maggots in a laboratory setting.

Laboratory research can give an idea of the possibilities of entomotoxicology, but has a few downsides. Research conducted by feeding the larvae an artificial diet does not take into account any metabolism of the controlled substances by the human prior to death.<sup>1</sup> Even though studies performed on tissue from deceased humans can account for metabolism of the controlled substances, it does not take into account the real-life patterns of oviposition of Diptera: *Calliphoridae* and variation of toxicology levels within the human body. Blow flies normally start oviposition at the natural orifices of the body, primarily the head region. Provided the controlled substances reach the brain, ingestion of the tissue by the maggots may affect their growth and development. The current research has focused on specific tissues like the liver. With the exception of wounds in the abdomen, the liver is not a tissue that is fed upon by maggots initially.

Field studies are vital to gaining a more complete understanding of how and if controlled substances are affecting the growth and development of blow fly larvae. Examination of toxicology levels of muscle tissue, along with major organs, will allow for a better understanding of how far into decomposition and feeding of the maggots before toxicology levels will be detected within blow fly larvae.

This presentation will examine the research that has been conducted and discuss the direction research needs to take.

### Reference:

1. Oliveira, H., Gomes, G., Marlin, J., Von Zuben, C., Linhares, A., (2009) The effect of Buscopan on the development of the blow fly *Chrysomya Megacehala* (F.) (Diptera: *Calliphoridae*). *Journal of Forensic Sciences*, 54(1), 202-206.
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### Entomotoxicology, Entomology, Toxicology