In vivo infections using the greater wax moth, Galleria mellonella

Commonly used acronym: *Galleria infections*

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Organisation

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Department Bio-engineering Sciences
Country Belgium
Geographical Area Brussels Region

SCOPE OF THE METHOD

The Method relates to	Animal health, Environment, Human health
The Method is situated in	Basic Research, Translational - Applied Research
Type of method	In vivo
Used species	The greater wax moth, Galleria mellonella
Targeted organ system or type of research	Virulence assays, pathogenicity and drug discovery

DESCRIPTION

Method keywords

Galleria mellonella
in vivo
Innate immune system
drug screening
Virulence assays
Systemic infections
professional phagocytes
cytotoxicity assay
Needle and bacterial inoculum
host-pathogen interactions

Scientific area keywords

drug screening
Virulence potential

Pathogenicity
Host-pathogen interactions
Infection models

Method description

A calculated number of bacteria is injected through the pro-legs of the larvae. As several entry points are present, this allows to inject virulent bacteria and potential antimicrobial compounds within the same host. The survival of the larvae is scored over time (days post inoculation) until about 10 days. The intoxicated larvae die and become black, rendering the observed lethality obvious.

Lab equipment

- Needles and syringes,
- Glass petri plates,
- Basic microbiology equipment to cultivate the bug of interest.

Method status

Internally validated
Published in peer reviewed journal

PROS, CONS & FUTURE POTENTIAL

Advantages

- Cheap,
- Flexible,
- Easy,
- *In vivo*,
- Medium to high throughput,
- No ethical issues,
- Innate immune system close to human,
- Possibility of several injections (bacteria and compound),
- Adapted for drug screening *in vivo*,
- Excellent cytotoxicity assay for novel compounds,
- No need to feed/water them,
- Calibrated larvae, antibiotic free, are easy to order and can be kept 2 weeks at 15°C.

Challenges

- Still an infection model,
- Absence of the adaptive immune system.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

VIRULENCE; 2016, VOL. 7, NO. 3, 214–229; http://dx.doi.org/10.1080/21505594.2015.1135289 Galleria mellonella infection models for the study of bacterial diseases and for antimicrobial drug testing Catherine Jia-Yun Tsaia, Jacelyn Mei San Loha, and Thomas Profta

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