

Human Health Evaluation of Modified Insects

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How DPR Would Approach Evaluating Potential Impact to Human Health from Modified Insects

Using *Aedes aegypti* as an Example



Toxicology Data Requirements for Modified Mosquitoes

Type of the Active Ingredient (AI)



Chemical



Biochemical



Microbial

- Genetically Modified Mosquitoes- Biochemical Pesticide
- *Wolbachia*-infected Mosquitoes- Microbial Pesticide

Proposed Toxicology Data Requirements for Modified Mosquitoes

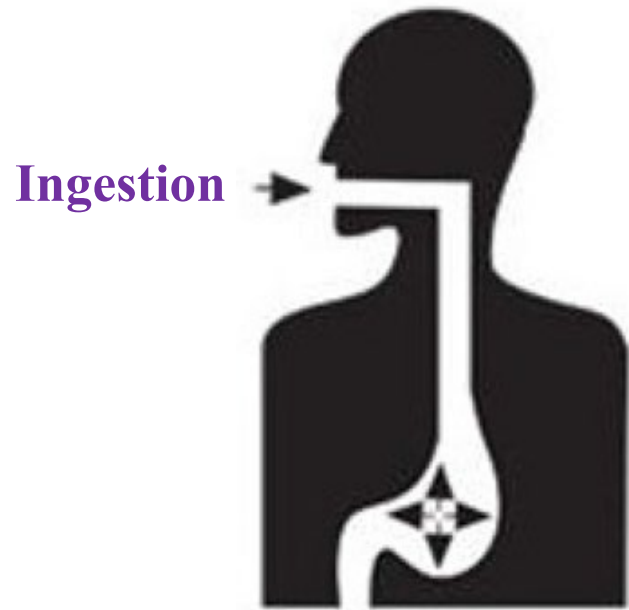
Genetically Modified Mosquitoes- Biochemical Pesticide

- Acute Oral Toxicity
- Acute Dermal Toxicity
- Acute Inhalation Toxicity
- Acute Eye Irritation
- Primary Dermal Irritation
- Hypersensitivity

Wolbachia-infected Mosquitoes- Microbial Pesticide

- Acute Oral Toxicity
- Acute Dermal Toxicity
- Acute Inhalation Toxicity
- Acute Eye Irritation
- Primary Dermal Irritation
- Hypersensitivity
- Acute Oral Toxicity/Pathogenicity Study
- Acute Injection Toxicity/Pathogenicity Study
- Acute Pulmonary Toxicity/Pathogenicity Study

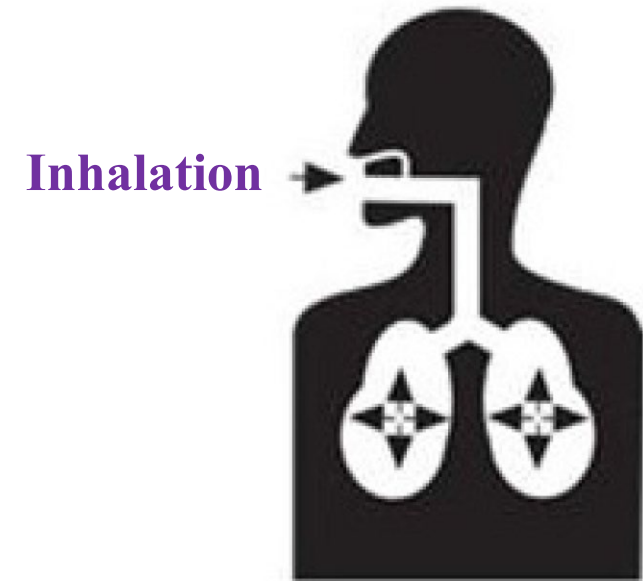
Toxicology Data Requirements for Modified Mosquitoes



Acute Oral Toxicity



Acute Dermal Toxicity/Irritation



Acute Inhalation Toxicity

Toxicology Data Requirements for Modified Mosquitoes




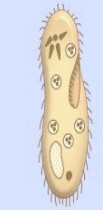




Eye irritation



Hypersensitivity



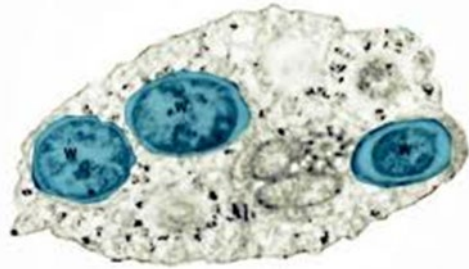
Acute Pathogenicity- Oral, Injection and Pulmonary

CELLULAR (LIVING)				ACELLULAR (NON-LIVING)	
					
Parasites (e.g. helminthes) ⇒ Tapeworm	Protozoa (e.g. plasmodia) ⇒ Malaria	Fungi (e.g. tinea) ⇒ Athlete's foot	Prokaryote (i.e. bacteria) ⇒ Leprosy	Virus (e.g. HIV) ⇒ AIDS	Prion ⇒ CJD

Allergenicity and Mammalian Toxicity of Recombinant Proteins



Protein sequence comparison with known allergens and toxins using Bioinformatics tools.



Information on toxic characteristics of source organism.



Immunization of recombinant proteins in rats or mice.



Overexpression of recombinant proteins in mammalian cell lines



Stakeholders Engagement and Communication

Thank you.

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