
Eliminating female *Aedes* mosquitoes by spiking blood meals with toxicants as a sex separation method in the context of the sterile insect technique and Incompatible Insect Technique

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Ivermectin and spinosad have longevity reducing effects in several insect species, including disease transmitting mosquitoes after feeding blood contaminated with above toxicants on hosts. Therefore, this approach could play an enormous role in mosquito control operations by its use in the female elimination process during mass-rearing, enabling the release of only sterile males in the context of the sterile insect technique (SIT) and incompatible insect technique (IIT) with *Wolbachia* bacterium.

Blood meals of cattle origin were spiked with different concentrations (2, 4, 6, 8 and 10 ppm) of Ivermectin (Ivotec, 1% w/v) and Spinosad (Spinosyn, 12% w/v) and offered to a batch of adult *Ae. aegypti* (n = 300) and *Ae. albopictus* (n = 300) having 1:1 sex ratio in order to obtain an optimal dose for quick and total female elimination. After 24 hours all remaining females and males were aspirated out and transferred in to new cages separately. An additional blood meal with the initially fed concentrations of ivermectin and spinosad was provided after 24 hours, followed by a 48-hour observation of mortality. This experiment was repeated by feeding cattle blood containing a mixture of ivermectin and spinosad in 1:1 ratio from each concentration.

Spiked blood with 8 ppm ivermectin and spinosad killed all the fed females of *Ae. aegypti* and *Ae. albopictus* within 24 to 48 hours. It was observed that the number of fed females gradually increased, when decreasing the toxicity in combination of ivermectin and spinosad (1:1) in blood for both species. Male mortality did not show any significant differences during the study. Mixed feeding of blood with 8 ppm ivermectin and 8 ppm spinosad have shown as the viable treatment to eliminate female *Ae. aegypti* and *Ae. albopictus* from laboratory colonies.

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