

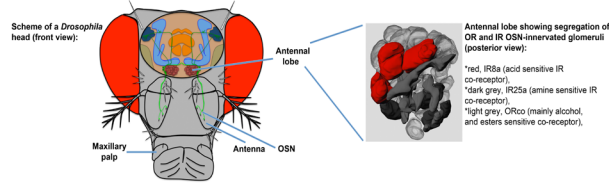
BIOCONTROL OF *DROSOPHILA SUZUKII* BY TWO FATTY ACIDS

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Introduction

The classical olfactory organs of *Drosophila melanogaster* adult are their antennae and their maxillary palps. These appendages house Odorant Sensitive Neurons (OSNs) that extend axons to olfactory glomeruli of the antennal lobes. Each OSN expresses usually one specific odorant receptor known either as Olfactory Receptor (OR) or as Ionotropic Receptors (IR). Specific volatile ligands bind to one or to several odorant receptors (ref. 1 & 2).



Olfaction plays an important role for food search, for danger detection, or for social interactions such as courtship. For example, pheromones or food-derived odorants are known to modulate courtship (ref. 3 & 4). Here we highlight the impact of a non-pheromonal odor (propanoic acid) on fly behavior (courtship), which can lead to anesthesia.

Fig 1:

Increasing concentrations of both fatty acids lead to significant decrease of *D. suzukii* courtship.

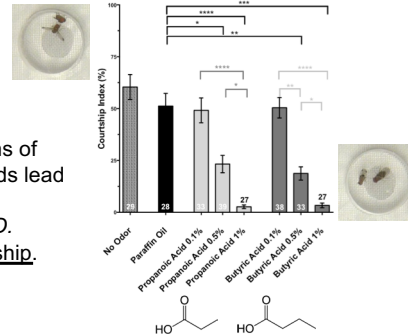


Fig 2:

Increasing concentrations of both fatty acids lead to significant decrease and abolition of *D. suzukii* copulation.

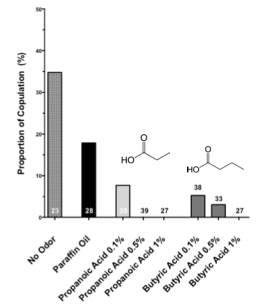


Fig 3:

The mixture of both fatty acids used at lower concentrations lead to significant decrease of *D. suzukii* courtship.

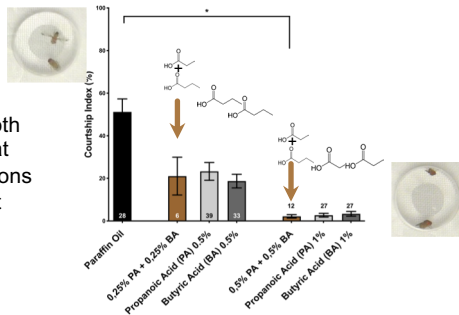
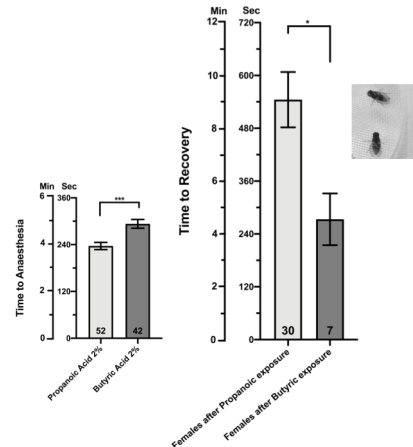


Fig 4:

Both fatty acids can induce a reversible anesthesia of *D. suzukii*.



Two volatile fatty acids significantly decrease *D. suzukii* courtship and copulation at increasing concentrations, and even induce reversible anesthesia. Hence, these molecules are non-toxic, and can be used to protect berry crops and cherries in an environmental-friendly manner, suitable to preserve biodiversity. This innovative technology is protected by the patent deposit PCT/EP2020/075386.

Conclusion

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