

The Influence of Delta-8 Tetrahydrocannabinol (THC)

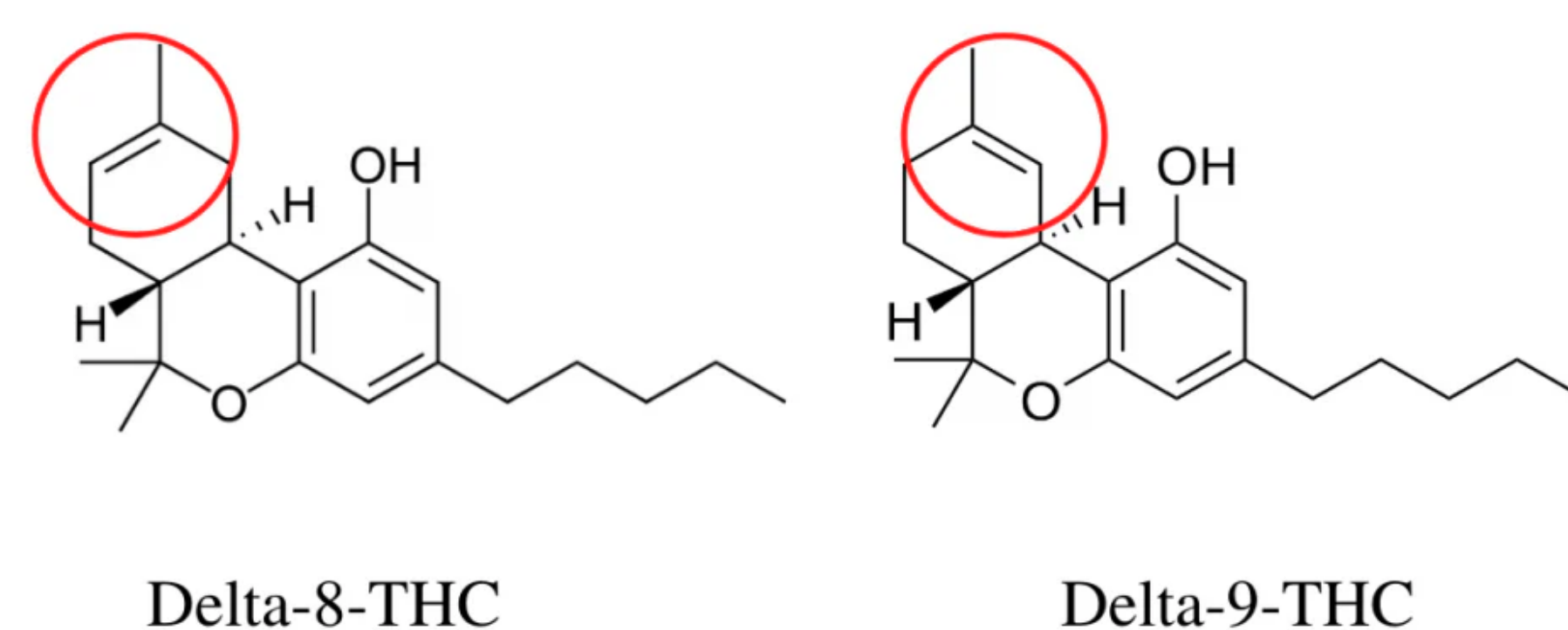
on *Drosophila melanogaster* Female and Male Locomotive Responses.

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Introduction

- Delta-8 is a psychoactive substance that is typically derived from hemp, a variety of the *Cannabis sativa* plant. It has intoxicating effects like delta-9 (THC). Delta-9 is the primary THC component responsible for the “high” people may experience from using cannabis.
- The National Institute of Health (NIH) recently reported that 11% of 12th graders in the U.S. had used delta-8 THC in 2023. The increase in usage among teens, combined with the adverse health effects and easy access to the drug have created a major concern across the United States.
- The focus of this study was to observe the effects of delta-8 THC on the locomotion of *D. melanogaster*.
- Hypothesis: Exposure to delta-8 THC will cause the mobility of female and male fruit flies to decline (*D. melanogaster*).
- Delta-8 has a double carbon on the 8th carbon, whereas delta-9 has it on the 9th carbon.

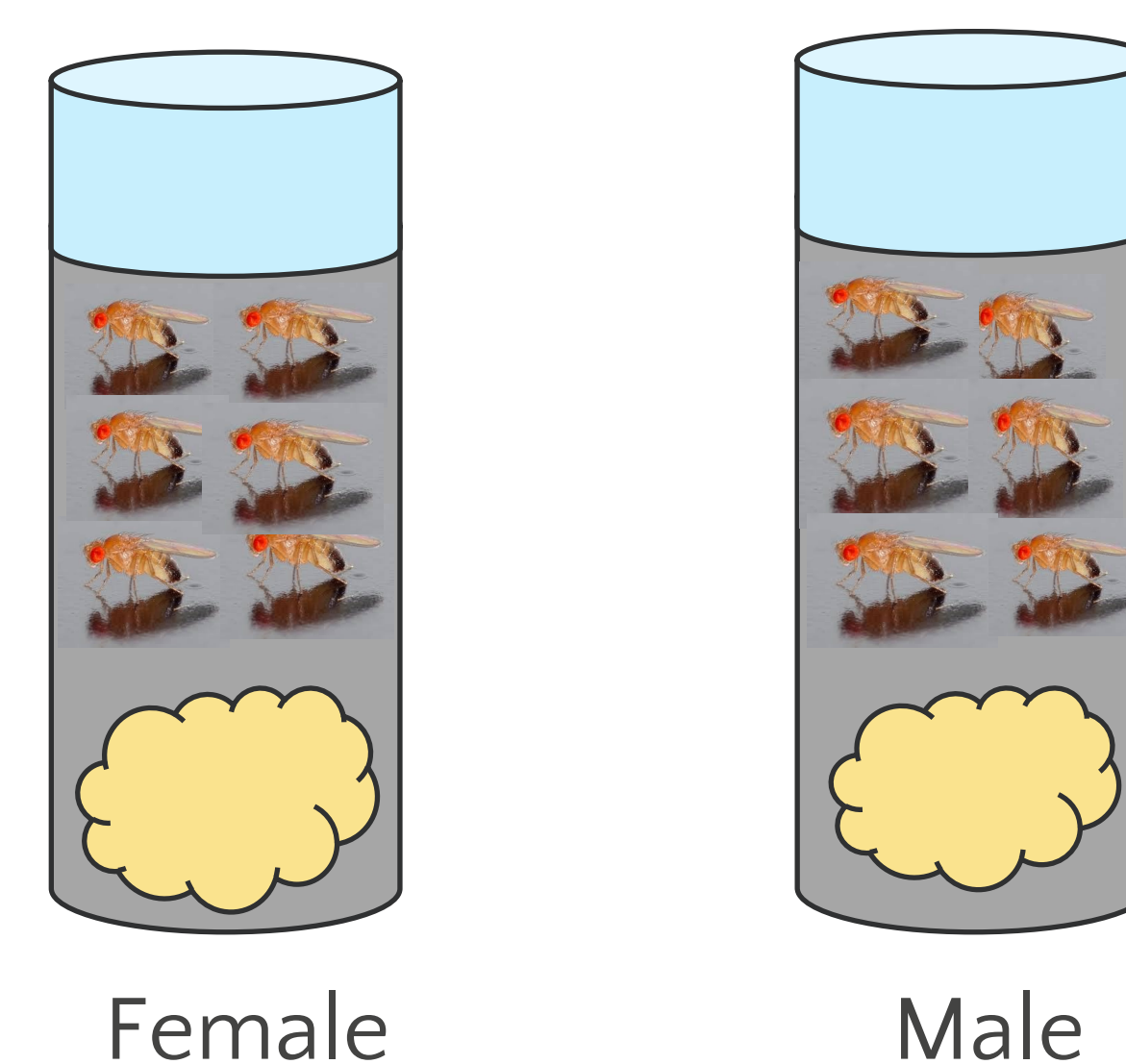
Delta 8 vs. Delta 9 THC



Methods

Treatment

1A Control Group



1B Experimental Group

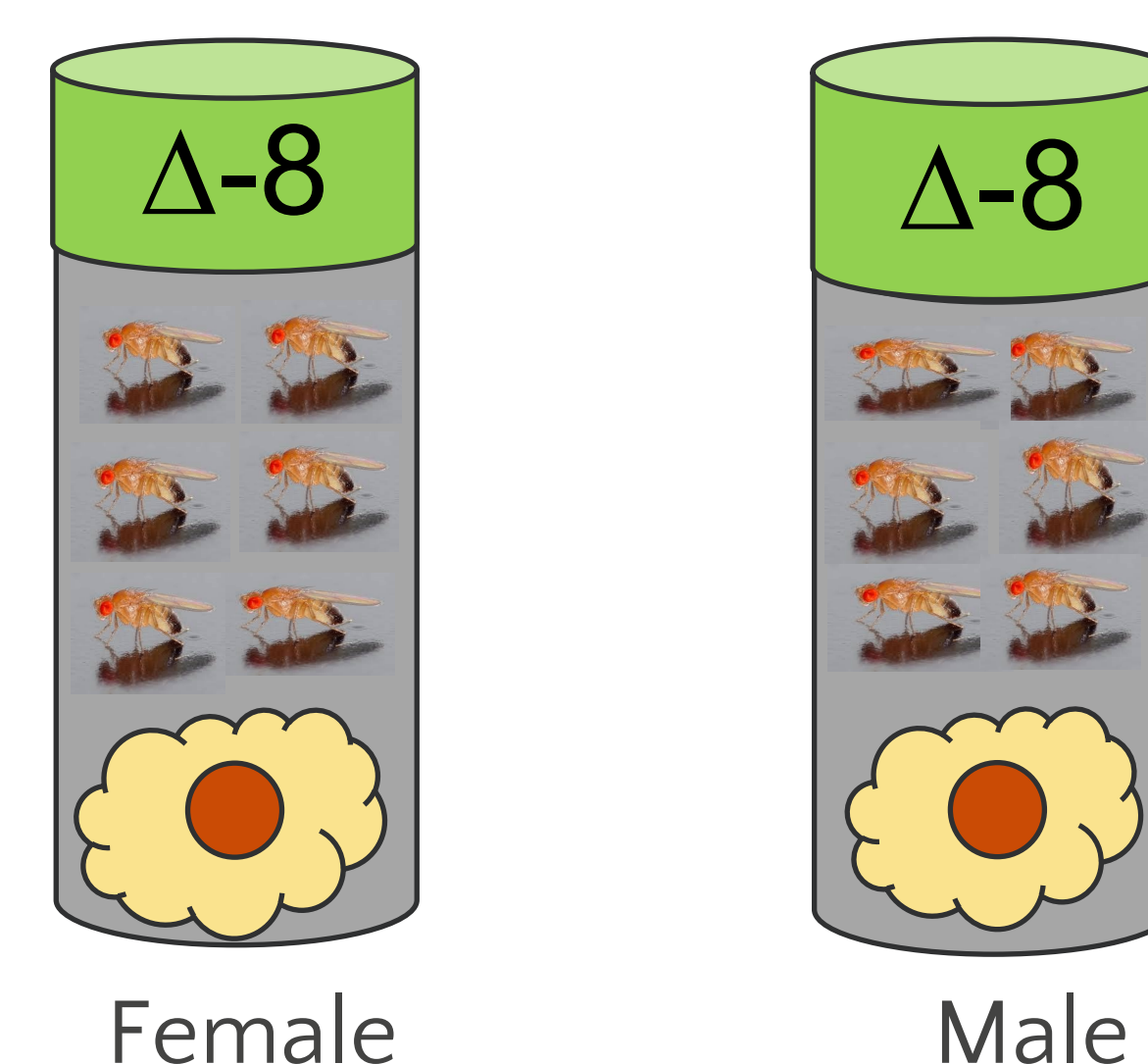


Figure 1A. The control group was divided into two sub-groups of three vials each with an equal number of *D. melanogaster*. One group had female while the second had males. The control group did not receive the THC treatment and were exposed regular food.

Figure 1B. The experimental group was also divided into two sub-groups of three vials each with the same number of *D. melanogaster*. One group had female, while the second had males. Thirty microliters of live resin containing delta-8 THC was added and mixed with the food. Then, the fruit flies were inserted in the vials and observed for twenty-four hours.

Climbing Assay

2A Female



2B Male



Figure 2A, 2B. The climbing assay method was used to determine the behavioral motor coordination of the fruit flies after exposure to the live delta-8 resin.

Notes

- The 2018 farm bill legalized hemp. Delta-8 THC is sourced from hemp, and not marijuana. Therefore, it is legal and unregulated at the federal level.
- 12 states in U.S. have prohibited the sale of delta-8. California has banned it by law & Hawaii have banned it by an administrative regulation not by law.

Results

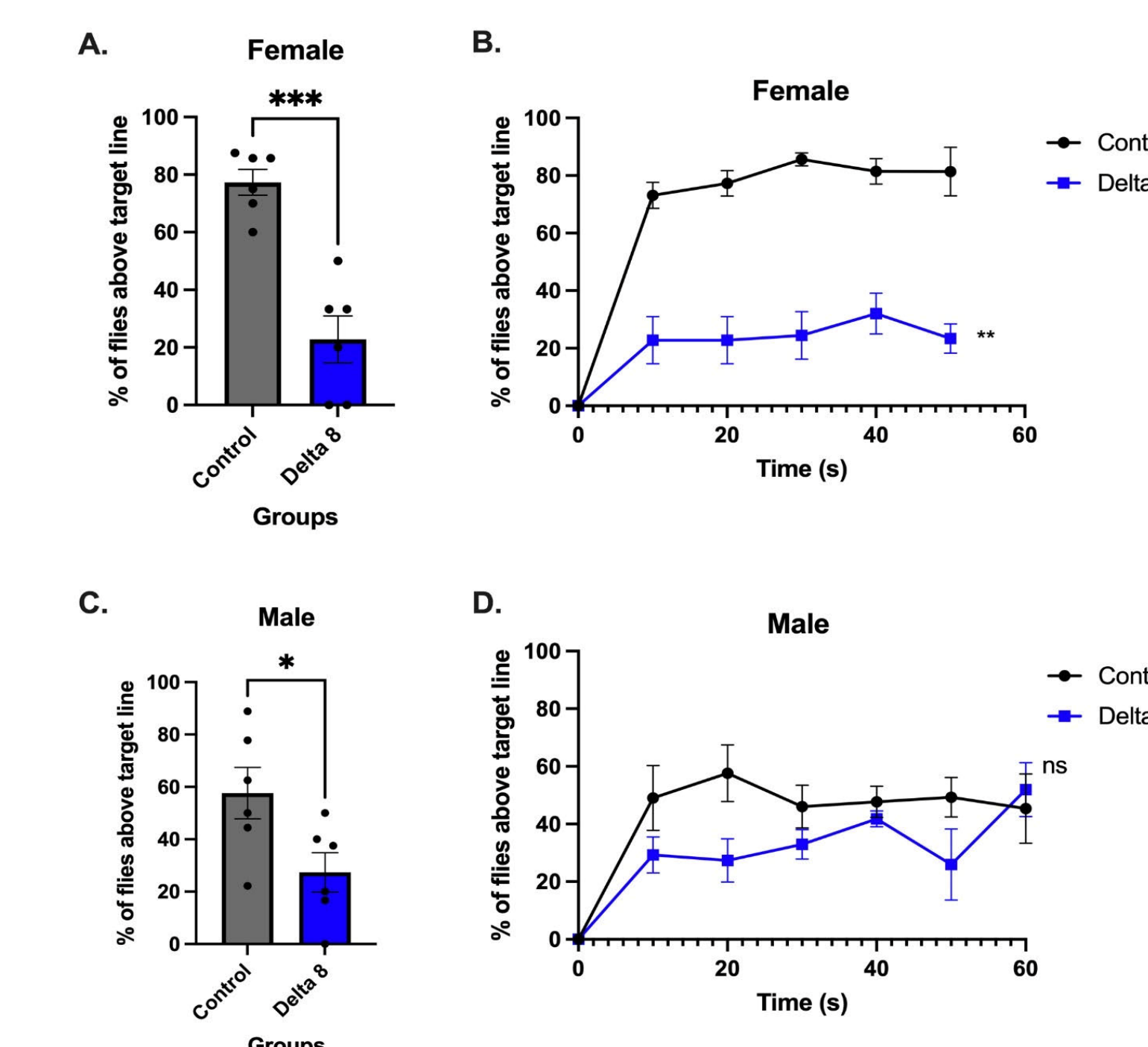


Figure 1. Climbing assays between female and male flies. (A, C) The percentage of flies at the top of the vial after 18 sec (N = 6, p < 0.002). (B, D) The percentage of flies having passed the threshold line is annotated every 10 sec over the duration of the assay.

Conclusion

- Although both male and female fruit flies experienced a decreased in the motion behavior after the exposure to the delta-8 resin, the observed effect on the females was more significant than on the males.
- Based on the results of this experiment, the hypothesis is accepted. Further studies are recommended. One study should examine the effect of varying amounts of delta-8 THC, while another should investigate the observed differences in the decrease of the locomotion between male and female when exposed to delta-8.

Acknowledgments

Dra. Michelle Borrero1, Brenda I. Santiago2
Part of the investigation was subsidized by the National Science Foundation (NSF), Grant number 21470