



# ROUNDUP EXPOSURE AFFECTS LONGEVITY, BODY WEIGHT AND FEEDING RATE IN *DROSOPHILA*

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## Introduction

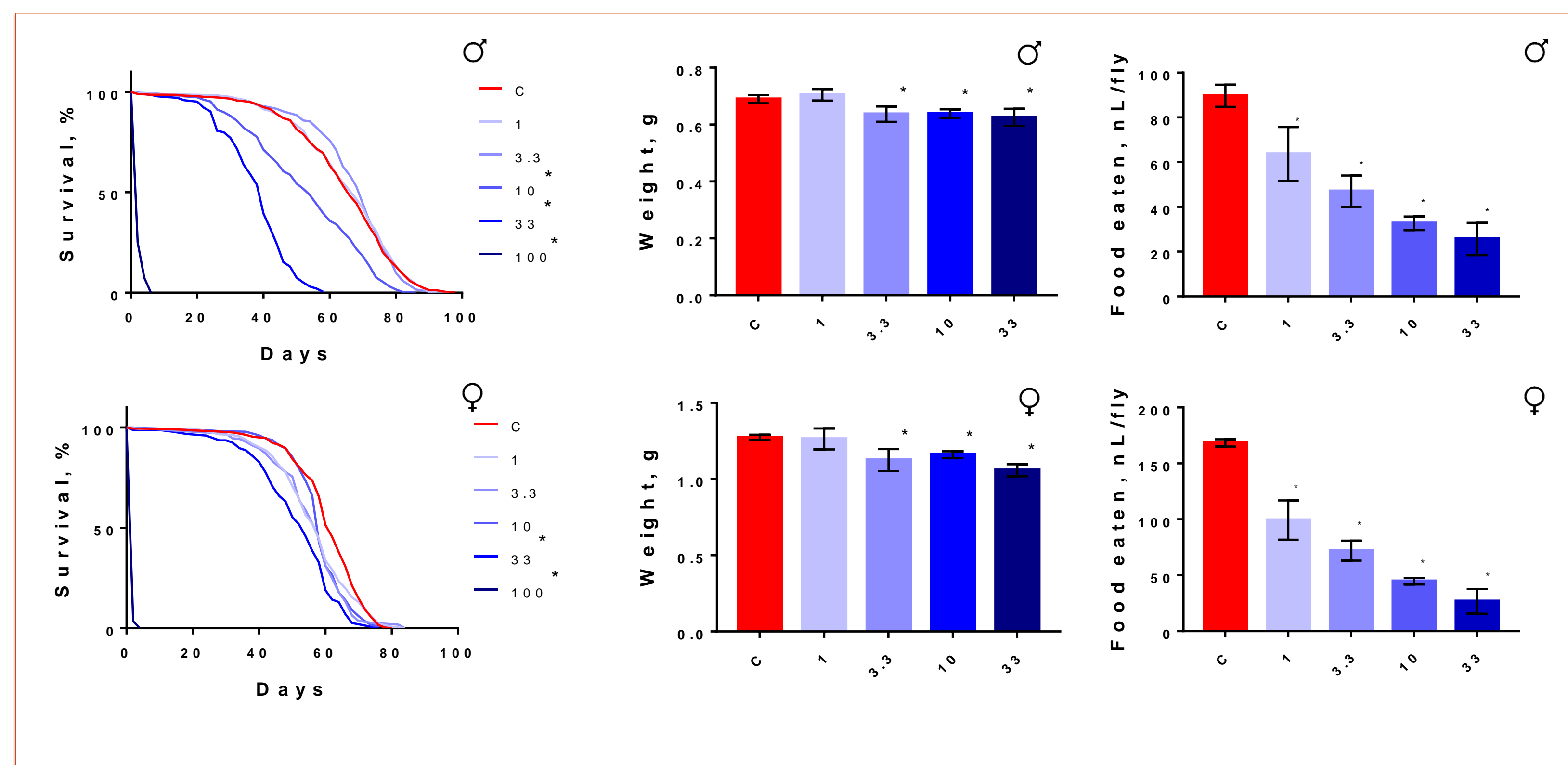
Roundup is a non-selective glyphosate-containing herbicide that acts through inhibition of plants enzyme 5-enolpyruvylshikimat-3-phosphate synthase. Due to their ability to accumulate in the environment, glyphosate-containing herbicides circulate in ecosystems and can be included in food chains, showing signs of toxicity to a wide range of non-target organisms.

## Results

We found that Roundup at the concentration of 10 g/l and higher reduced the lifespan of males ( $P < 0.05$ ), while in females a reduction in the lifespan was observed when Roundup was added to the medium at a concentration of 33 g/l ( $P < 0.05$ ) and 100 g/l ( $P < 0.01$ ). Consumption the medium with Roundup at a concentration of 3.3 g/l and higher reduced the body weight of flies in flies of both sexes ( $P < 0.05$ ). Roundup in the diet reduced the amount of food consumed even at the lowest experimental concentration – 1 g/l in males and females ( $P < 0.05$ ). However, Roundup supplementation to the food of flies had no effect on the level of TAG storage in the body.

## Material & Methods

We used the laboratory line of flies W1118 *D. melanogaster* as a model. Animals were kept at a constant conditions: temperature 25° C, relative humidity 50-70% and photoperiod of 12:12 (day / night). On the 5-day-old flies were placed in demographic cages with a experimental food 5%S+5%Y (5% sucrose, 5% dry yeast, 1.2% agar and 0.18% nipagin). To assess the effect of the herbicide Roundup it was supplemented to the medium at the concentration range from 1 g/l to 100 g/l. To determine lifespan the number of dead individuals were counted. Experimental flies were weighted at 13 day. The TAG content was determined by enzymatic colorimetric methods using “Serum Triglyceride Determination Kit” according to the manufacturer's instructions (Sigma Aldrich). Feeding rate was determined using colorimetric method by adding to the standard experimental medium non-absorbable blue food dye E133.



## Conclusions

Roundup cause the lifespan shortening and decrease the weight of flies during the experiment. However, Roundup exposure had no effect on the level of TAG storage in the body.

Our data showed, that an additional reason to the negative consequences of Roundup is a decrease in food intake and a potential lack of nutrients for the *Drosophila* model.