



White wine consumption decreases weight gain in rats

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INTRODUCTION

- Alcohol is a rich source of energy (7.1 kcal/g).
- There are conflicting results on association between alcohol consumption and weight gain in humans.
- In animal studies, both ethanol and red wine did not promote body weight gain in comparison to water-only drinking controls.
- Effects of white wine on weight gain and food intake in rats have not been investigated.
- It is also unknown whether alcohol consumption causes different effects on weight gain in animals of different age and development phase.

OBJECTIVES

- To investigate the white wine effects on weight gain in rats in 4 weeks consumption trial.
- To examine potential different effects of wine consumption in two animal groups, younger rats in phase of fast growth and development and older ones close to the plateau of their body weight.
- To analyze food and total liquid intake among the groups and its association with body weight gain rate.

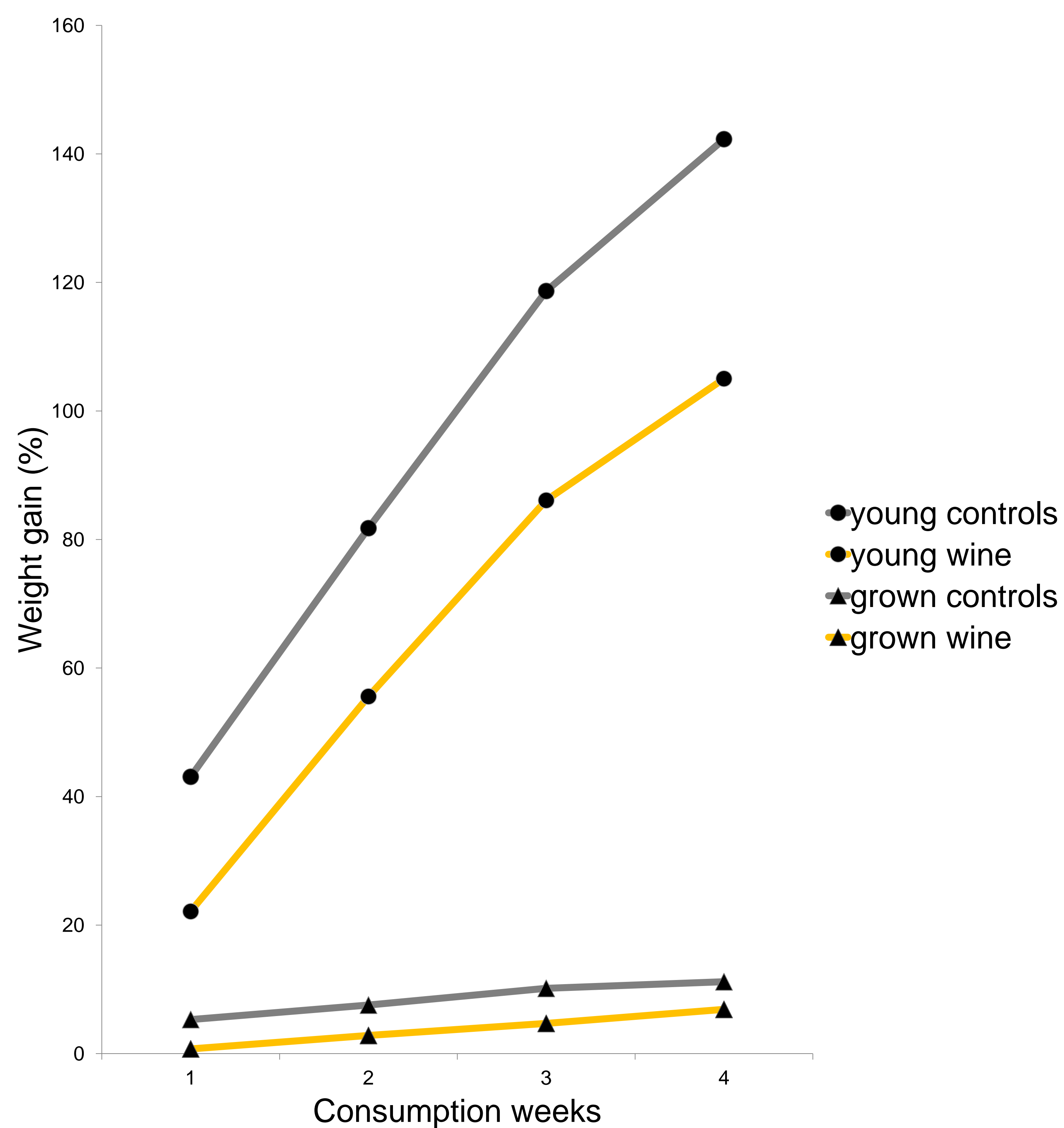


Figure 2. Effect of white wine consumption on weight gain in young and grown rats during 4 weeks in comparison to water-only drinking controls (N=10 per group). Data are mean±SD.

METHODS

Two groups of male rats according to initial body mass and age were used. Younger group consisted of 20, one month old Sprague Dawley rats, weighing 150-200 g, and grown group included 20 rats, approximately 3 months old, weighing 400-500 g. The groups were further divided (Figure 1). The wine drinking animals were offered *ad libitum* Grasevina, Krauthaker winery, 2015, 13 vol% alcohol, 24hours/day for 4 weeks with daily inclusion of tap water for 6 hours. The animals were fed a standard pellet diet *ad libitum*. Fluids intake was recorded daily. Body weight and food intake were measured weekly.

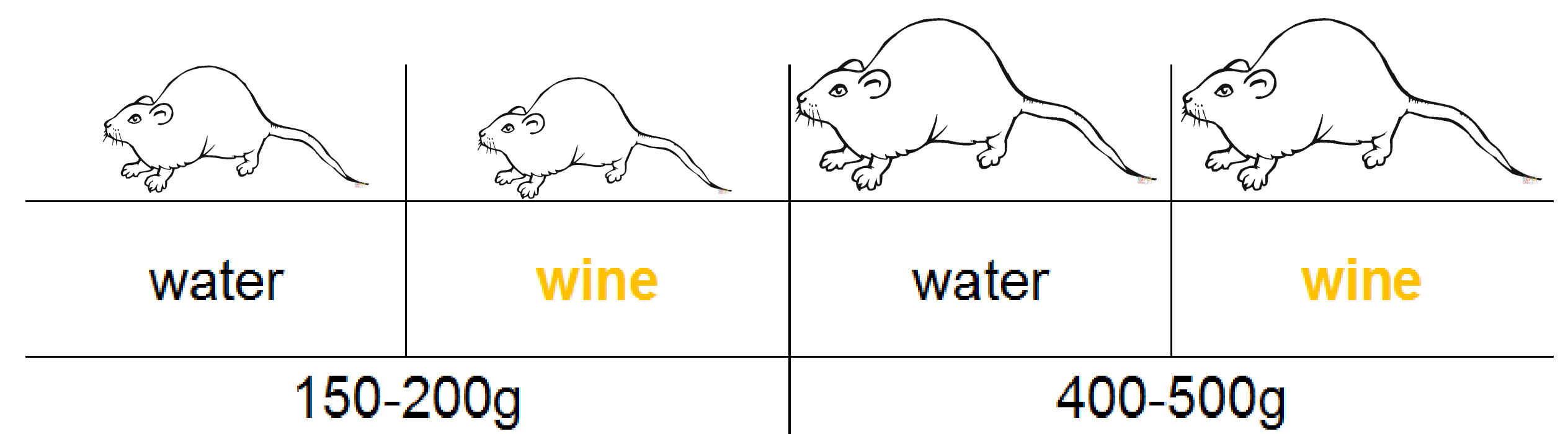


Figure 1. Animal groups (N=10 per group).

RESULTS

After 4 weeks of consumption both young and grown rats gained less weight in comparison to controls (P=0.003 and P=0.016, respectively). (Figure 2). There was no difference in total daily liquid intake among wine-consuming and control groups. On the other hand, weekly and total food intake in all wine-consuming rats was reduced (Table 1).

Table 1. The main outcomes of white wine consumption trial in young and grown animals. Data are mean±SD.

| | Young controls | Young wine | Grown controls | Grown wine |
|--|----------------|------------|----------------|------------|
| Total daily liquid intake (mL) | 35.7±3 | 35±6 | 33±3 | 33±4 |
| | P=0.709 | | P=0.741 | |
| Weekly food intake (g) | 188±7 | 164±9 | 184±11 | 164±13 |
| | P<0.0001 | | P=0.001 | |
| Total food intake in 4 weeks (g) | 751±28 | 657±34 | 735±42 | 658±52 |
| | P<0.0001 | | P=0.001 | |
| Weekly weight gain (g) | 51±5 | 43±5 | 12±5 | 8±3 |
| | P=0.001 | | P=0.048 | |
| Weight gain after 4 weeks (g) | 203±19 | 171±19 | 47±18 | 31±14 |
| | P=0.001 | | P=0.031 | |
| Relative weight gain after 4 weeks (%) | 142.3±30.2 | 105.0±17.1 | 11.2±4.3 | 6.9±3.0 |
| | P=0.0032 | | P=0.016 | |

CONCLUSION

White wine consumption decreases weight gain in rats regardless of their age and initial body mass in comparison to water drinking controls. It seems that additional calories provided by wine were compensated for by reduced intake of food in the wine consuming animals.

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