



Dried Plums Ability to Protect from Post-Menopausal Weight Gain Due to Alterations in Gut Micro Flora



Introduction

Each year in this country, approximately 1.5 million Americans suffer an osteoporosis-related fracture and approximately 70% of those individuals are postmenopausal women (1). Postmenopausal women experience an increase in adiposity, increasing their chances of cardiovascular disease, type II diabetes, and certain cancers (2). Animal data using the ovariectomized (OVX) mouse, a model of postmenopausal osteoporosis, have shown an increase in adiposity. The incorporation of plant-based foods into the diet has been shown to prevent weight gain. Studies have shown that fat mass and percent fat of OVX mice fed dried plum were lower than OVX mice fed a control diet (3). Dried plum supplementation has also been shown to protect against bone loss induced by hormone deficiency (3).

Purpose

To identify the active component (s) in dried plum that are responsible for preventing weight gain due to estrogen deficiency, and to understand how that bioactive component is working.

Methods/Materials Used

In this study, there will be five groups of ovariectomized mice and one group of sham-operated mice involved in the experiment. The groups are defined as follows;

Group 1: Sham Operated on Controlled Diet (Con.)

Group 2: OVX on Controlled Diet

Group 3: OVX + 25% Dried Plum Diet (DP)

Group 4: OVX + DP Polyphenol and Carbohydrate Extract Diet (Crude)

Group 5: OVX + DP Carbohydrate Extract Diet (CHO)

Group 6: OVX + DP Polyphenol Extract Diet (PP)

Results

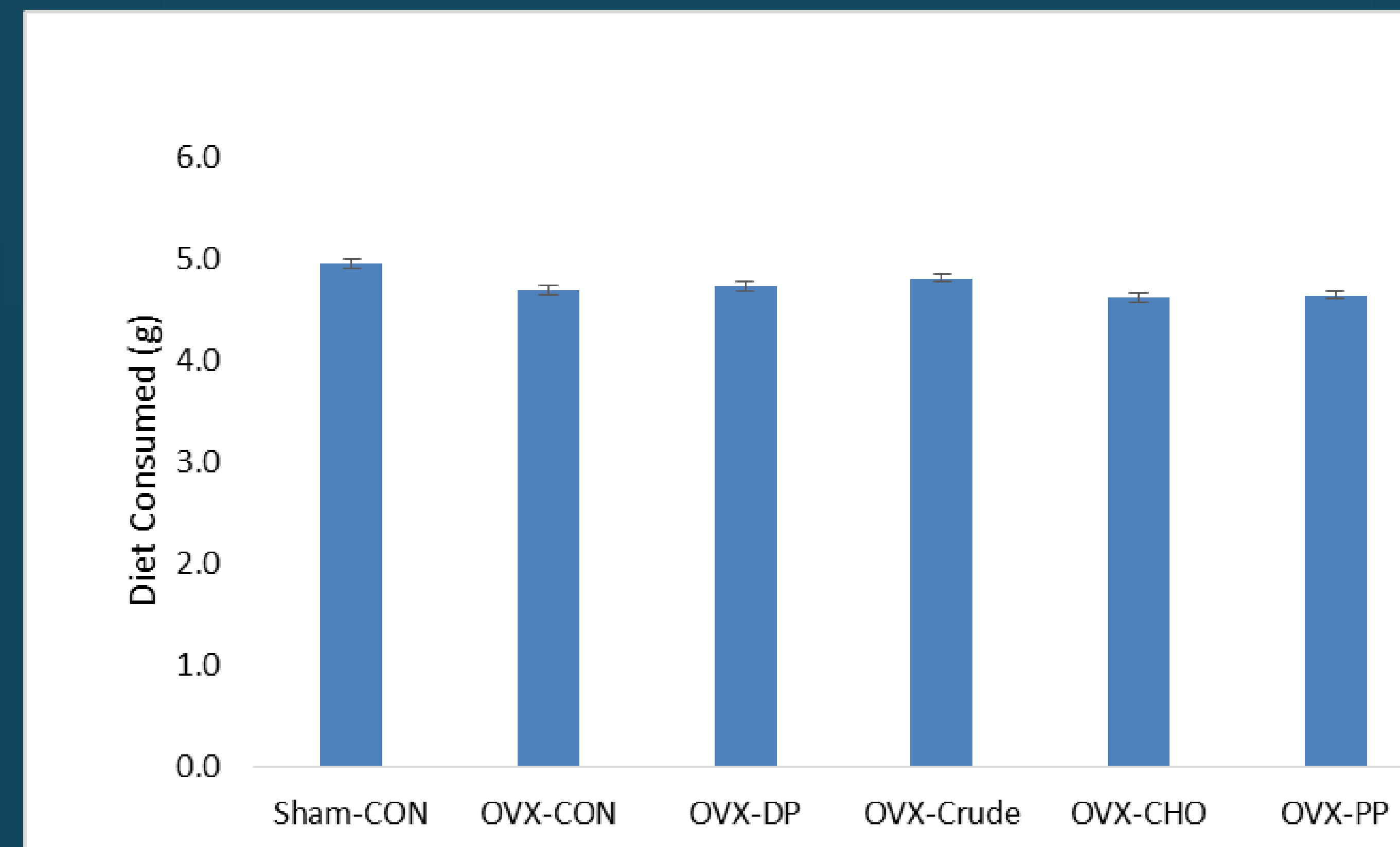


Figure 1. Average food intake by group over an 8 week period.

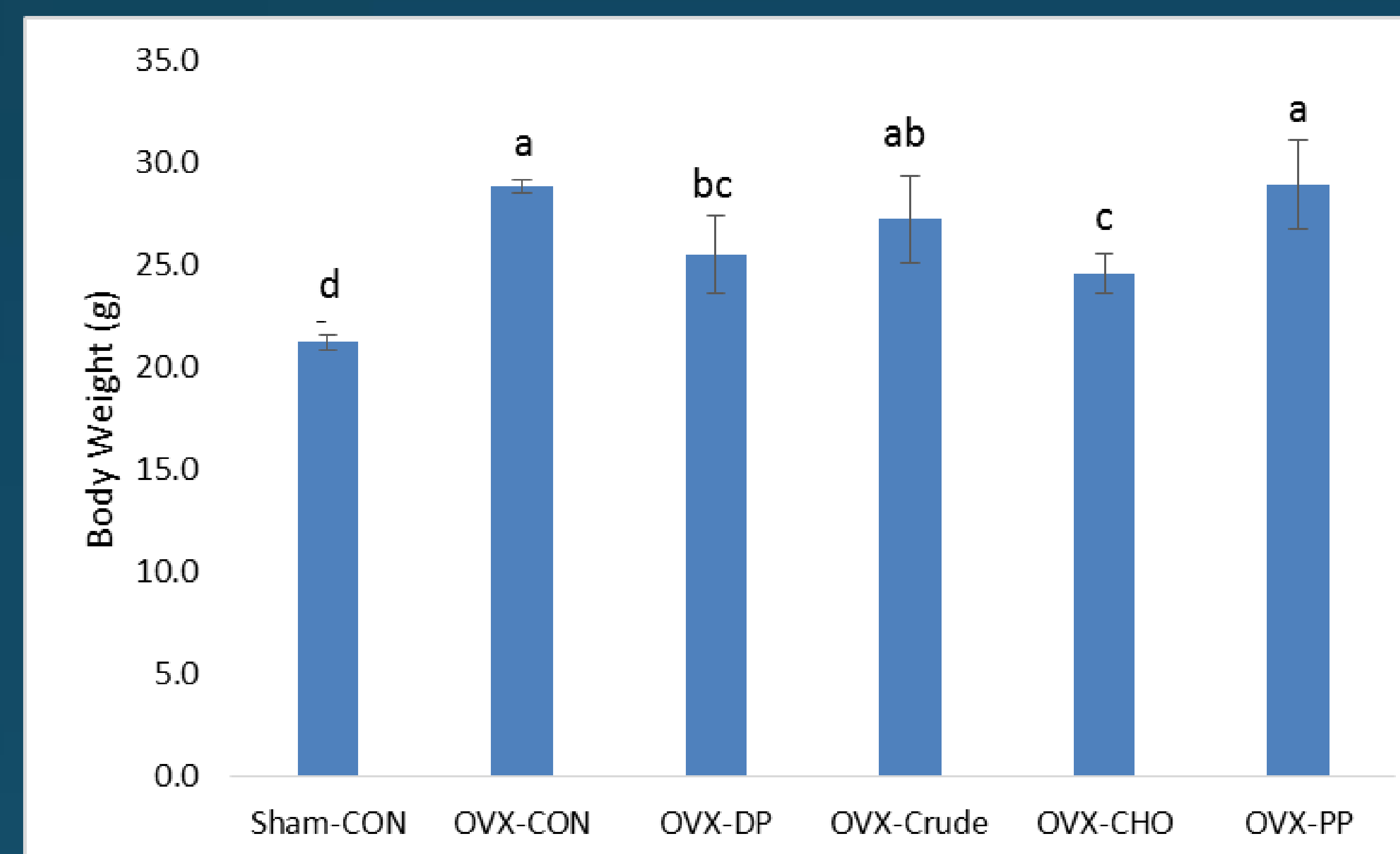


Figure 2. Final body weights by group.

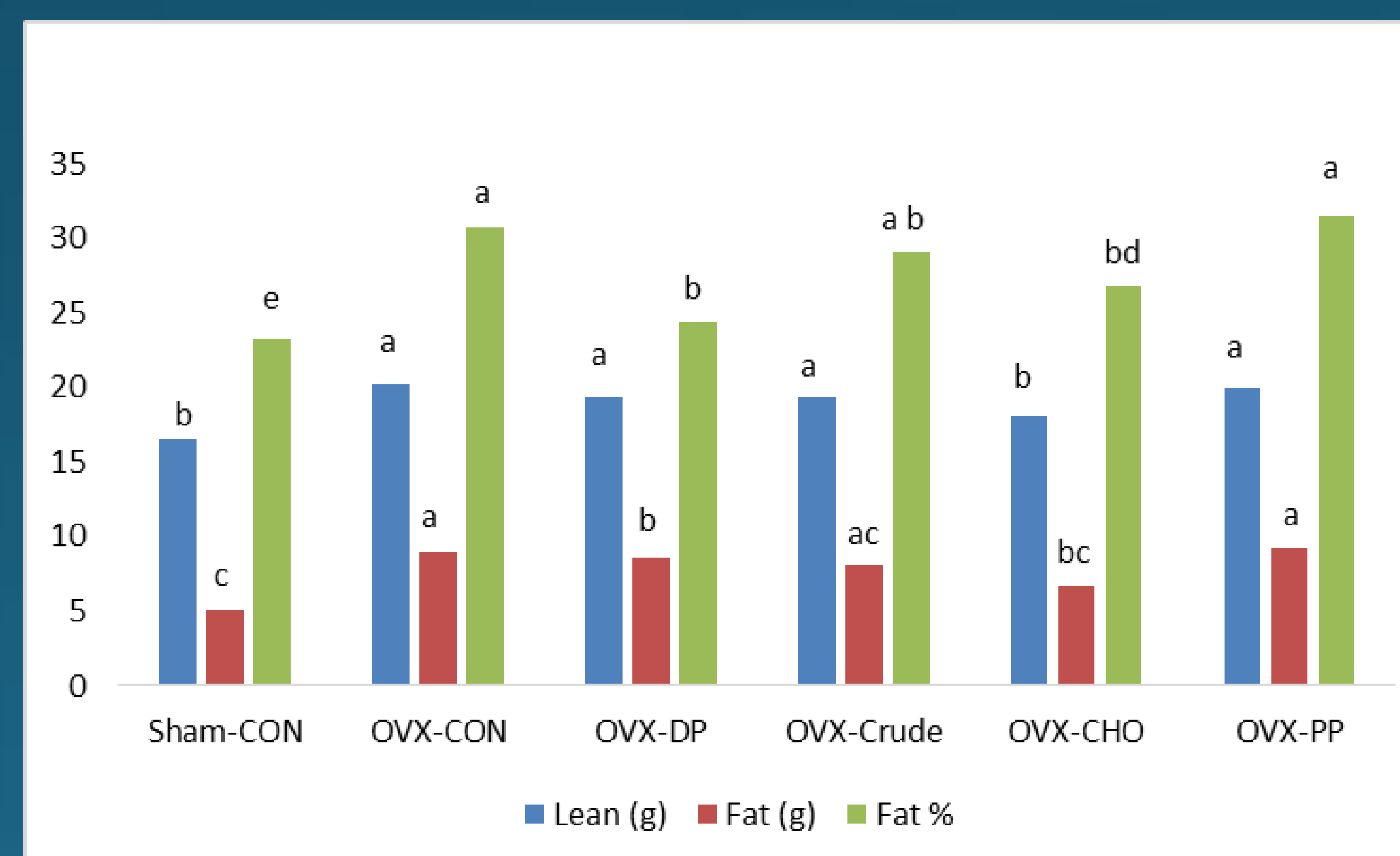


Figure 3. This chart shows the total body, total lean mass, and percent fat per group.

Summary

- On average OVX mice on a dried plum diet as well as the carbohydrate rich diet maintained the lowest weight throughout the study.
- OVX mice on a dried plum diet maintained a low percent body fat similar to the Sham group.
- OVX mice consuming the CHO diet experienced a significant reduction in percent body fat compared to the DP and OVX control groups.

Conclusion

- Based on these findings, the carbohydrate component of dried plum is responsible for the observed decrease in adiposity in the OVX mice.

Future Research

- Profiling of the gut microbiota will be performed (i.e. sequencing) from all six groups after an 8 week supplementation period.

References

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