Seed oil from *Pinus radiate* promotes beneficial morphological and inflammatory changes in visceral adipose tissue from high-fat diet-induced obese mice


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Obesity and overweight are increasingly common conditions associated with poor-quality diet. These conditions trigger hyperplasia and hypertrophy of adipocytes and inflammation, therefore targeting this tissue and its local inflammation became the most effective therapeutic approach to overcome obesity. Previous studies have revealed that oils derived from the *Pinaceae* family, commonly used as a dressing in the Asian cuisine, suppress appetite, however it remains unknown whether seed oil from *Pinus radiata* exhibit any beneficial effect on adipose tissue morphology or inflammatory state. In this study, we analysed the effect of a *P. radiata* seed oil-based supplement (SuplD) on a murine model of high fat diet (HFD)-induced obesity. Female C57BL/6J mice were fed with HFD for 3 months until obesity was established. Then, obese mice were randomized and divided into 3 groups: under HFD supplemented with 15% w/w SuplD, under HFD supplemented with 15% w/w Glycine max oil as a negative control, and under HFD without supplementation as untreated control. After 3 months post supplementation, mice treated with SuplD showed increased frequency of small adipocytes within the visceral adipose tissue in comparison with controls. Moreover, increased presence of small adipocytes niches containing pre-adipocytes, identified as CD34+, CD29+ and CD45-, and increased Von Willenbrand Factor expression, indicating increased adipose vascularity, were also observed in tissues from mice treated with SuplD. Finally, when immunological parameters were evaluated, we observed increased IL-10 and Arginase-1, and reduced TNF-α and IL-6 expression in visceral adipose tissue samples from mice treated with SuplD compared to control groups. Altogether, our results suggest that oral administration of a *P. radiata*-based supplement in obese mice promotes hyperplastic growth of small adipocytes, increases vascularity in the visceral adipose tissue and an anti-inflammatory local environment. These observations suggest that *P. radiate* seed oil could be clinically relevant in human obesity.

Recent Publications


Biography

Daniela Rojas is a Medical Technologist working at the Department of Veterinary Pathology, University of Concepción. She has worked with different research groups in the Faculty of Veterinary Science for over 15 years.

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