Effects of Flaxseed-supplementation on DNA Methyltransferase and Obesity-associated Gene Expression in Adipose Tissue from Obese Mice

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INTRODUCTION

Treatment with natural compounds has been shown to epigenetically regulate gene expression through DNA methylation¹. Consumption of the health-promoting compounds present in flaxseed, such as secoisolariciresinol diglucoside and omega-3 fatty acids, has shown improvement in obesity related indicators²,³,⁴.

PURPOSE & HYPOTHESIS

To determine the effect of the health promoting compounds of flaxseed on DNA methyltransferases (DNMTs) and obesity-associated gene, leptin and peroxisome proliferator-activated receptor alpha (PPAR-α), expression

Sample and Data Collection

Perirenal and abdominal adipose tissue collection

Weekly food intake and weight measurement

DNMT1, DNMT3a, DNMT3b, Leptin, PPAR-α expression by RT-qPCR

RESULTS

Statistical Analysis

SAS 9.3

ANOVA with Tukey-Kramer Post hoc test

Pearson correlation test

Significance level: p < 0.05

Data presented as mean ± standard error

CONCLUSION

Health-promoting compounds of flaxseed, affect selected gene expression. It is possible that defatted flaxseed may be capable of epigenetic regulation of leptin due to antioxidant activities of secoisolariciresinol diglucoside. However, further research is needed to identify the specific mechanisms regulating leptin or PPAR-α expression during diet-induced obesity development.

REFERENCES


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