Rejuvenation Res. 2015 Sep 28. [Epub ahead of print]

Black cohosh ameliorates metabolic disorders in female ovariectomized rats.

Sun Y[1], Yu Q[2], Shen Q[3], Bai W[4], Kang J[5,6].

Author information

[1]Peking University First Hospital, Department of Obstetrics and Gynecology, Beijing, China ; 1013925306@qq.com.
[2]School of Basic Medical Sciences, Peking University Health Science Center, Department of Physiology and Pathophysiology, Beijing, China ; yqx0901@163.com.
[3]School of Basic Medical Sciences, Peking University Health Science Center, Department of Physiology and Pathophysiology, Beijing, China ; shenqiyang2008@sina.com.
[4]Peking University First Hospital, Department of Obstetrics and Gynecology, Beijing, China ; bwp66@163.com.
[5]Beijing, China.
[6]School of Basic Medical Sciences, Peking University Health Science Center, Department of Physiology and Pathophysiology, Beijing, China ; kangjihong@bjmu.edu.cn.

Abstract

Estrogen deficiency is associated with **metabolic** derangements in menopausal women. **Black cohosh** has been widely used as an alternative therapy in the treatment of menopausal syndrome. However, its role in metabolism needs to be defined. The aim of the present study was to investigate the long-term effect of **black cohosh** on glucose and lipid metabolism in a rat model of postmenopause. Adult **female** Sprague-Dawley **rats** were sham operated (SHAM), **ovariectomized** (OVX), OVX with the treatment of estradiol valerate (OVX+E), or OVX with the treatment of isopropanolic **black cohosh** extract (OVX+iCR). Body weight, body composition, and blood glucose levels of the animals were monitored. The **rats** were then sacrificed after 3 months of the treatments. At the end of the experiment, OVX+iCR and OVX+E **rats** exhibited a significant decrease in body weight gain, body and abdominal fat mass, serum triglyceride levels, hepatic fat accumulation, and adipocyte hypertrophy compared with OVX **rats**. In addition, insulin resistance and glucose intolerance were improved in OVX+iCR, but not in OVX+E **rats**. No hepatotoxicity was detected in OVX+iCR animals. Furthermore, Western blot analysis suggested the increased lipolysis in adipose tissue of OVX+iCR and OVX+E **rats**. Data from in vitro experiments using cultured primary rat adipocytes also showed that **black cohosh** could affect lipolysis of adipocytes. In conclusion, the long-term treatment of **black cohosh** at a proper dosage ameliorated **metabolic** derangements in OVX **rats**. This drug is thus promising for the treatment of **metabolic disorders** in menopausal and postmenopausal women.