In vivo estrogenic comparisons of Trifolium pratense (red clover) Humulus lupulus (hops), and the pure compounds isoxanthohumol and 8-prenylnaringenin.

Overk CR, Guo J, Chadwick LR, Lantvit DD, Minassi A, Appendino G, Chen SN, Lankin DC, Farnsworth NR, Pauli GF, van Breemen RB, Bolton JL.

UIC/NIH Center for Botanical Dietary Supplements Research, Program for Collaborative Research in the Pharmaceutical Sciences (PCRPS) and Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago, 833 S. Wood Street, M/C 781, Chicago, IL 60612, United States.

The lack of a safe and reliable alternative to hormone therapy (HT) for treating menopausal symptoms underscores the need for alternative therapies. OBJECTIVE: The purpose of this study was to assess the in vivo estrogenic effects of the botanical dietary supplements Trifolium pratense (red clover) and Humulus lupulus (hops), and two compounds obtained from H. lupulus, isoxanthohumol and 8-prenylnaringenin (8-PN) using the ovariectomized uterotrophic adult rat model. A H. lupulus extract and a 30% isoflavone extract of T. pratense were tested at three escalating doses as was one dose of isoxanthohumol for 21d. 8-Prenylnaringenin, the major estrogen in H. lupulus, was also tested at three relevant escalating doses. In order to determine the in vivo metabolism of 8-PN, the major phases I and II metabolites were also identified. The primary outcome measure, uterus weight gain, indicated that H. lupulus and T. pratense did not have an estrogenic effect on the uterus, and none of the secondary outcome measures were positive. In contrast, there was a clear dose response when 8-PN was evaluated where the middle and high doses of 8-PN were active. 8-Prenylnaringenin in rat plasma, liver, and mammary gland was measured and the major phases I and II 8-PN metabolites were detected. Our findings suggest that while both the H. lupulus and T. pratense extracts do not have an effect on the rat uterus, 8-PN at equivalent doses to those previously used in humans did have an effect, and may therefore have a deleterious effect in women.

PMID: 18619951 [PubMed - as supplied by publisher]