

Bradley Harr

Nutritional Sciences

Year in School: Senior

Hometown: Columbia, Mo.

Faculty Mentor: Dr. Catherine Peterson, Nutritional Sciences

Hormonal contraceptive use increases serum 25-hydroxyvitamin D concentrations in active, young women

Bradley C.Harr , Susan M. Ring , Rebecca D. Imhoff, Pamela S.Hinton, & Catherine A. Peterson

Many studies have shown that the estrogen in oral hormonal contraceptives (HC) increases serum 25-hydroxyvitamin D 25(OH)D concentrations in women. As a hormone that regulates gene transcription estrogen is known to increase Vitamin-D binding protein concentrations, and therefore 25(OH)D concentrations in the blood. Furthermore, Vitamin D is a major regulator of bone metabolism and its status within the blood influences circulating levels of bone turnover markers. The objective of this study was to determine the effects of HC use on serum 25OHD concentrations and biochemical markers of bone turnover in active young females. Thirty-nine young (age 18-33 years), active (≥ 5 h of aerobic exercise per week) women participated (HC users, n=16; Non-users, n=23). Of the HC users, 9 were taking monophasic HC; 7 were taking triphasic HC. Fasting serum samples were taken during the early follicular phase (d2-5 of the menstrual cycle) and were analyzed for 25OHD and biochemical bone markers [bone alkaline phosphatase (BAP), N-telopeptide of collagen cross-links (NTx), parathyroid hormone (PTH) and osteocalcin (OC)] using radioimmuno assay and ELISA, respectively. Serum 25OHD was significantly greater (p=.007) and BAP significantly lower (p=.002) in HC users compared with nonusers. No differences were found between groups for NTx, PTH or osteocalcin. Serum concentrations of BAP and Vitamin D were negatively correlated (r= -.453; p=.004). We conclude that HC use is associated with increased serum 25OHD concentrations and lower circulating BAP in young active females.