

ABSTRACT

Levels of the Phytoestrogen Metabolites Enterolactone and Equol in Postmenopausal Women in Jamaica

Angella Mechel Turner-Dawkins

Phytoestrogens are diphenolic compounds with structural similarities to the endogenous estrogen 17 β -estradiol. The heterogeneous nature of phytoestrogens causes them to have varying impacts on different organs and tissues, which can be either protective or harmful. Several studies have reported beneficial effects of phytoestrogens as it relates to bone health and cardiovascular diseases, however these studies were conducted in either Asian or European countries, hence the findings cannot be extrapolated to Jamaican women of Afro-Caribbean descent.

The main objective of this study was to investigate the levels of phytoestrogen metabolites, equol and enterolactone in postmenopausal Jamaican women and to determine if there are any associations with phytoestrogen levels and the markers of bone health and cardiovascular disease.

This study involved 175 postmenopausal women. Spot urine and fasting blood samples were collected; blood pressure and anthropometric data were measured. Total cholesterol, triglycerides, serum calcium and urine creatinine were measured. Urinary enterolactone and equol were measured using time resolved

fluoroimmunoassay. Bone mineral density was measured and a food frequency questionnaire administered.

There was a wide variation in the levels of enterolactone excreted (0.003-31.610 nmol/mg creatinine), while equol levels ranged from (0.031- 8.300 nmol/mg creatinine). Increased enterolactone excretion was associated with increased bone mineral density ($p=0.047$). Both enterolactone and equol were associated with reduced risk of high blood glucose (OR, 0.14; 95% CI 0.04-0.53, $p=0.000$) and (OR, 0.27; 95% CI, 0.09-0.85, $p=0.020$) respectively. They were also associated with reduced risk of high diastolic blood pressure (OR 0.28; 95% CI, 0.08-0.92, $p=0.04$) and (OR, 0.11; 95% CI, 0.02-0.63, $p=0.01$) respectively in non-hysterectomised women. For the non-hysterectomised women levels of triglycerides increased with respect to increased ENL excretion and a similar association was seen with equol and total cholesterol.

This study suggests that while intake of certain phytoestrogens may be protective against some cardiovascular risk factors and low bone mineral density, there are risks associated with their activities.

Keywords: Phytoestrogens, menopause, enterolactone, equol, bone mineral density, cardiovascular disease, Jamaica.