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Are the EDMs a factor risk in postmenopausic women?

Menopause is associated with a higher risk of cardiovascular disease, possibly due to the altered estrogen metabolism. During this stage, the estrogens level decrease, because they are transformed into estrogenic degradation metabolites (EDMs). The EDMs produce reactive oxygen species when they are generated, leading to an increase in oxidative stress which may have implications for cardiovascular health during menopause.

In an attempt to determine if EDMs are linked to cardiovascular disease, serum samples from women with cardiovascular risk (CAC > 1), established cardiovascular disease (CVD), and healthy controls (Ctrl) were analyzed. The samples were obtained by the Mexican study Genetics of Atherosclerotic Disease (GEA). The measurement of EDMs was achieved by HPLC, and some markers of oxidative stress and nuclear damage were also evaluated.

The levels of 17β-estradiol and estriol in CAC>1 and CVD groups were lower than in healthy postmenopausal women. This pattern was replicated by the metabolite 4-methoxy-17β estradiol. Meanwhile the CAC>1 and CVD groups had higher levels of estrone 3-propyl ether, estrone 3-methyl ether, and 2-hydroxyestrone. Despite their low levels in all groups, 2-hydroxyestradiol and 4-hydroxyestradiol were almost undetectable in CVD. This explanation could be given by the enzymatic O-methylation of certain estrogenic metabolites to methoxyestradiols and conversion to quinones, which can bind to DNA and cause oxidative damage. In this regard, there was a rise in oxidative stress and a decrease in oxidative stress management capacity in CAC>1 and CVD groups. This study suggests that certain EDMs may indicate cardiovascular risk in women going through menopause, but additional research is needed to confirm their causal role in cardiovascular function.

Keywords: estrogenic degradation metabolites (EDMs), menopause, cardiovascular disease, women

Biography

Researcher in Medical Sciences at the Pharmacology Department of Instituto Nacional de Cardiología Ignacio Chávez. She received her PhD in Science at UNAM. She is member of the National System of Researchers (SNI level 1). Her research is focus to examine the effects of natural products, estrogens and EDM´s on cardiovascular diseases. She has published 20 papers in national and international journals, as well as a chapter in a book.

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