

Role of glucose in regulating menstrual cycle

Irina Vasilieva*¹, Maria Vasilieva², Ilie Vasiliev³

¹Department of Medical Laboratory State University of Medicine and Pharmacy
“Nicolae Testemitanu”.

²Department of Neurology nr. 2 State University of Medicine and Pharmacy “Nicolae
Testemitanu”.

³World Academy of Medical Science, WAMS.

Scientific adviser: Professor Anatolie Visnevschi, MD, PhD, Head, Department of
Laboratory Medicine. State University of Medicine and Pharmacy “Nicolae
Testemitanu”.

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Goal of the study: To find correlation between estrogen hormone and glucose intake.

Introduction: The main estrogens: estradiol, estrone and their acyl-esters have been studied essentially related to their classical estrogenic functions. However their main effect in the body is probably the sustained control of core energy metabolism. With regard to energy, the estrogen molecular species act through control of glucose availability.

Material and methods: There were analyzed articles from the PubMed database, from the last 5 years 2019-2024, mentioning such words as “estrogen”, “glucose”, “menstrual cycle” [1].

Results: Estrogens play a paramount and continued regulatory role, to maintain energy (lipid / glucose) homeostasis. Estrogens have extensive and powerful control of energy homeostasis. Premenopausal women exhibit enhanced insulin sensitivity and reduced incidence of type 2 diabetes, compared with age matched men, but this advantage disappears after menopause with disrupted glucose homeostasis, in part owing to a reduction in circulating 17β -estradiol (E2). Moreover a study shows the efficacy of a glucagon like peptide-1 and estrogen dual agonist (GLP1-E2) in pancreatic islet protection. The enzymes that are involved in the menstrual cycle are β -glucuronidase, thought to be involved in the final stages of mucopolysaccharide breakdown.

Conclusion: So far there is limited information on the major role played by different forms of physiological estrogens in the control of energy metabolism at the whole body level. E2 protects the functionality of the pancreatic β cells, preventing apoptosis, adapting their function to insulin resistance and maintaining their insulin content. The lack of E2 availability also increases hepatic insulin clearance. Estrogen receptor α plays a crucial role in regulating glucose.

However, the underlying mechanisms remain incompletely understood and therefore studies on the maintenance of (lipid / glucose) homeostasis are ongoing [2-10] in various neuro-endocrine and visceral multisystem biomedical areas, where the diagnostic role of markers is essential [11,12].

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