

# Regulatory Effects of Estradiol on Peripheral Blood Mononuclear Cells Activation in Patients with Asthma.

[Ahmadi-Vasmehjani A<sup>1</sup>](#), [Baharlou R<sup>2</sup>](#), [Atashzar MR<sup>1</sup>](#), [Raofi R<sup>3</sup>](#), [Jafari M<sup>1</sup>](#), [Razavi FS<sup>4</sup>](#).

## Abstract

Asthma prevalence and severity are greater in women than in men, and mounting evidence suggests this is in part related to female steroid sex hormones. Conflicting data are reported regarding pro- and anti-inflammatory properties of estradiol. This study was designed to clarify whether estradiol may contribute to enhanced T helper (Th) 17-associated cytokines production by peripheral blood mononuclear cells (PBMC) in asthmatic patients and healthy individuals. PBMCs from patients with asthma and healthy donors were cultured with 17- $\beta$  estradiol (E2) and phytohemagglutinin (PHA). The quantitative real-time polymerase chain reaction (qRT-PCR) was used to measure IL-6, IL-17, IL-23 and TGF- $\beta$ . We observed a significant increased IL-17, IL-23 and TGF- $\beta$  expression in PBMCs of patients compared to the healthy individuals. In addition, our findings indicated that IL-6 and IL-17 expressions in PBMCs were induced, following E2 treatment. Our results identified an impact of E2 in stimulation of Th17 phenotype, and upon hormonal oscillations and hormone replacement therapy (HRT), asthma inflammation may be mediated by Th17-associated cytokines.

## KEYWORDS:

Asthma; Estradiol; IL-17; IL-21; IL-23; TGF- $\beta$