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PCOS: PAB and Inflammatory Cytokines

# Evaluation of pro-oxidant-antioxidant balance (PAB) and its association with inflammatory cytokines in polycystic ovary syndrome (PCOS)

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## Abstract

Chronic low-grade inflammation has been suggested as a key contributor of the pathogenesis and development of polycystic ovary syndrome (PCOS). To investigate the association between oxidative stress status and inflammatory cytokines in follicular fluid of 21 PCOS women compared to 21 women with normal ovarian function who underwent intra-cytoplasmic sperm injection. Concentration of IL-6, IL-8, IL-10, and TNF- $\alpha$  was measured using sandwich ELISA. Oxidative stress was examined by measuring total oxidant status (TOS), malondialdehyde (MDA), total antioxidant capacity (TAC), and thiol groups. PCOS women had an elevated concentration of MDA and TOS

compared to controls. Levels of TAC and thiol groups were lower in PCOS compared to controls. PCOS patients had a higher concentration of IL-6, IL-8, and TNF- $\alpha$  compared to controls. Concentration of IL-10 was lower in PCOS compared to controls. Significant correlations were found between MDA and TOS concentration with TNF- $\alpha$  and between IL-6 and MDA, IL-8 and TAC, IL-10 and TOS levels and also between IL-10 and TAC levels. TAC and thiol groups were negatively correlated with TNF- $\alpha$ . Increased oxidative stress in PCOS is associated with inflammation which is closely linked. Inflammation can induce production of inflammatory cytokines in this syndrome and directly stimulates excess ovarian androgen production.

## Chinese abstract

目的：探讨多囊卵巢综合征（PCOS）患者卵泡液氧化应激、炎症及炎症细胞因子水平。方法：选取21例PCOS患者及21例健康对照者，检测卵泡液IL-6、IL-8、IL-10、TNF- $\alpha$ 水平，采用ELISA法检测MDA、TOS、TAC、MDA、TOS、TAC水平。结果：PCOS患者卵泡液IL-6、IL-8、TNF- $\alpha$ 水平显著升高，IL-10水平显著降低。MDA、TOS水平显著升高，TAC水平显著降低。PCOS患者卵泡液IL-6、IL-8与TNF- $\alpha$ 、IL-10、MDA、TOS、TAC水平呈正相关，IL-10与TAC水平呈负相关。结论：PCOS患者卵泡液氧化应激、炎症及炎症细胞因子水平异常，提示氧化应激、炎症及炎症细胞因子在PCOS发病中起重要作用。

Keywords:

Oxidative stress   inflammation   inflammatory cytokines   follicular fluid   PCOS

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The study was approved by Hamadan University of Medical Science Ethics Committee (IR.UMSHA.REC.1395.191). All subjects provided written informed consent. All procedures performed were in accordance with the ethical standards of the local research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

# Disclosure statement

The authors report no conflicts of interest.

## Additional information

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