

**Oxidative stress in polycystic ovary syndrome**

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**Introduction:** Polycystic ovary syndrome (PCOS) is a common reproductive disorder in women that is characterized by a number of conditions such as chronic anovulation, enlarged cystic ovaries, hyperandrogenism, infertility and often insulin resistance. Women with PCOS present difficulties in becoming pregnant and often experience spontaneous abortion, along with menstrual and skin disorders , as well as increased risk of some pregnancy disorders such as GDM and preeclampsia. Oxidative stress designates the state of imbalance between reactive oxygen species (ROS) production and antioxidant levels. This balance is lost in some situations, with a consequent increase in oxidative stress levels. Oxidative stress has been implicated in several disorders and pathologies.

**Methods :** It is a systematic review of studies reporting circulating markers of oxidative stress in women with PCOS and controls published up to 2015.

**Findings:** PCOS has been associated with increased ROS levels, mainly due to a decrease of the antioxidant capacity. Several studies suggested that PCOS independently influences oxidative stress, by measurement of total oxidant status and total antioxidant capacity . Correlation between insulin resistance, oxidative stress biomarker levels such as malondialdehyde, and PCOS was observed in non-obese women and between mitochondrial dysfunction, by decrease in O<sub>2</sub> consumption and in Glutathione levels, and PCOS were found in polymorphonuclear cells. Finally, in some studies, the correlation between PCOS and oxidative stress seems to be more evident in obese women . The antioxidant N-acetylcysteine was found to be a safe and welltolerated adjuvant to clomiphene citrate for improvement of ovulation and pregnancy rates in PCOS patients. Moreover, controlled-release alpha lipoic acid has positive effects on PCOS phenotype, although its effects may be exerted through a mechanism not involving changes in oxidative stress.

**Conclusions :** Circulating markers of oxidative stress are abnormal in women with PCOS independent of weight excess. This finding suggests that oxidative stress may participate in the pathophysiology of this common disorder. There is little convincing evidence that antioxidant supplements can improve fertility or prevent miscarriage or PE. Nevertheless, the range of strategies attempted so far has been extensive, improve the reproductive health of patients needs adequately powered trials in this area.

**Key words :** oxidative stress, polycystic ovary syndrome, antioxidant

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