INTRODUCTION

Polycystic ovary syndrome (PCOS) is a common disease that affects up to 10% of women of reproductive age; characterized by hyperandrogenism, enlarged cystic ovaries, and chronic anovulation. Patients with this syndrome may complain of abnormal bleeding, infertility, obesity, excess hair growth, hair loss and acne ***(Ciampelli and Lanzone; 1998).***

Insulin resistance and hyperinsulinemia are now recognized as common features in women affected by PCOS. Chronic hyperinsulinemia may be a risk factor for several clinical pathologies such as gestational and non-insulin-dependent diabetes, hypertension, thrombosis, and cardiovascular disease. Insulin excess may also exert an endocrine impact on the ovary; in vitro, insulin has been shown to directly stimulate androgen secretion and to enhance LH-mediated responses in isolated thecal tissue to a greater extent than in normal ovaries. Furthermore, in vivo data seem to confirm that insulin might influence ovarian as well as adrenal steroidogenesis ***(Fulghesu, et al; 2002)***.

The in vivo actions of IGF-I are modulated by a system of circulating binding proteins (IGFBPs). IGFBP-1 has a unique role in the dynamic regulation of serum IGF-I bioavailability. In

serum, IGFBP-1 has been found to correlate inversely with estimates of the free fraction of IGF-I, a relationship that has not been reported for the other IGFBPs. Serum and follicular fluid IGFBP-1 concentrations are decreased in PCOS, presumably due to hyperinsulinism and consequent suppression of IGFBP-1 synthesis. Although the levels of total serum IGF-I are normal in PCOS, the decreased IGFBP-1 concentrations could lead to elevated levels of free IGF-I, which may then stimulate ovarian androgen synthesis (***Van Dessel, et al; 1999).***

N-acetylecysteine (NAC) is the acetylated precursor of both the amino acid L-cysteine and reduced glutathione (GSH). Historically it has been used as a mucolytic agent in chronic respiratory illness as well as an antidote for hepatotoxicity due to acetaminophen overdose. More recently, animal and human studies of NAC have shown it to be a powerful antioxidant and a potential therapeutic agent in the treatment of cancer, heart disease, HIV infection, heavy metal toxicity, and other diseases characterized by free radical, oxidant damage ***(Chiao, et al; 2000).*** Furthermore, NAC adjuvant therapy in subjects with PCOS resistant to clomiphene citrate gives a significant increase of both ovulation and pregnancy rates ***(Rizk, et al; 2005).***

The preliminary results on the effectiveness of the antioxidant drug NAC suggest that it may be a new treatment

for hyperinsulinemia in patients with PCOS, which is of note also because of the absence of side effects. This drug may be an alternative to other insulin-lowering drugs such as metformin or troglitazone ***(Fulghesu, et al; 2002)***.