INTRODUCTION

Polycystic ovary syndrome (PCOS) is a common disease that affects up to 10% of reproductive age women **(Ciampelli et al., 1998) .**

Polycystic ovary syndrome (PCOS) is characterized by clinical and/or biochemical hyperandrogenism (oligomenorrhea hirsutism, sever acne, and high serum levels of testesterone , androstenedione , and DHEAS)**(Glueck et al., 1999).** Many women, with PCOS have anovulatory infertility .

Insulin resistance and elevated serum LH levels are also common features in PCOS. PCOS is associated with an increased risk of type 2 diabetes and cardiovascular events (**ESHRE/ASRM-Sposored PCOS Consensus Workshop Group, 2004**) .

some studies have been published concerning the activity of N-acetyl cysteine (N.A.C.) on insulin secretion in pancreatic B- cells , as well' as on the regulation of the insulin receptors in human erythrocytes **(Fulghesu et al.,2002)** N.A.C. is commonly used as a safe mucolytic drug but , at higher doses it increases the cellular levels of reduced glutathaion ; an antioxidant which has been shown to influence insulin receptors in vivo . **(De Mattia et al ., 1998)** . N. acetyl cysteine (N.A.C.) : is a cetylated form of amino acid L-cystiene . acetyl cysteine NAC is a precursor of reduced glutathione (GSH) , and is deacetylated into cystine . NAC is a mucolytic agent and it also has a beneficial effects in conditions characterized by decreased GSH , such as HIV , cancer , heart disease and cigarette smoking **(Arsetall et al ., 1995).**

Recently , it was demonstrated that oral treatment with the antioxidant NAC in non - insulin - dependant diabetic patients significantly reduced intra - erythrocyte GSH levels and was able to prevent endothelial damage after oxidative stress in these patients **(*Flughesu et al , 2002*) .**

Fulghesu et al, (2002) demonstrated a significant reduction of both circulating insulin levels and peripheral insulin resistance, as well as a significant reduction of T levels and free androgen index (FAI) values in the whole study group. In hyperinsulinemic subjects there was a significant increase in insulin sensitivity, as well as a concomitant reduction in circulating insulin levels and secretion after OGTT . In normoinsulineemic subjects, no changes could be detected in C-peptide and insulin levels or in peripheral insulin sensitivity after NAC treatment.

Some reports discussed the possible beneficial effects of NAC on ovulation (***Rizk et al*, *2005* & *Bedaiwy et al., 2004***).It has an activity on insulin secretion in pancreatic cells and on insulin receptors on human erythrocytes (***Borgstrom et al.,1986* & *Flughesu et al , 2002*.**). Being an insulin sensitizer, NAC was suggested as an adjuvant to CC for ovulation induction in patients with PCOS. NAC also has an antiapoptotic effect (**Odetti et al., 2003**), preserves vascular integrity ***(Sekhon et al.,2003)*** and has an immunologic effect (***Lappas et al ., 2003***). The multiplicity of actions of NAC and the encouraging preliminary reports stimulated us in this study to investigate the effects of NAC in promoting the effects of CC on ovulation in PCOS patients .