

Inositol administration reduces oxidative stress in erythrocytes of patients with polycystic ovary syndrome

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Abstract

Objective: Possibly due to a deficiency of insulin mediators, polycystic ovary syndrome (PCOS) is often associated with insulin resistance (IR) and hyperinsulinemia, likely responsible for an elevated production of reactive oxygen species. We investigated oxidative-related alterations in erythrocytes and anti-inflammatory effects of inositol in women with PCOS before and after treatment with myo-inositol (MYO).

Methods: Twenty-six normal-weight PCOS patients [Q2](#) were investigated before and after MYO administration (1200 mg/day for 12 weeks; nZ18) or placebo (nZ8) by evaluating serum testosterone, serum androstenedione, fasting serum insulin, fasting serum glucose, insulin area under the curve (AUC), and glucose AUC after oral glucose tolerance test and homeostasis model of assessment–IR. In erythrocytes, band 3 tyrosine phosphorylation (Tyr-P) level, glutathione (GSH) [Q3](#) content, and glutathionylated proteins (GSSP) were also assessed. **Results:** Data show that PCOS patients' erythrocytes underwent oxidative stress as indicated by band 3 Tyr-P values, reduced cytosolic GSH content, and increased membrane protein glutathionylation. MYO treatment significantly improved metabolic and biochemical parameters. Significant reductions were found in IR and serum values of androstenedione and testosterone. A significant association between band 3 Tyr-P levels and insulin AUC was found at baseline but disappeared after MYO treatment, while a correlation between band 3 Tyr-P and testosterone levels was detected both before and after MYO treatment.

Conclusions: PCOS patients suffer from a systemic inflammatory status that induces erythrocyte membrane alterations. Treatment with MYO is effective in reducing hormonal, metabolic, and oxidative abnormalities in PCOS patients by improving IR.

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