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TITLE

METABOLIC IMPAIRMENT AND NEW THERAPEUTIC STRATEGIES IN PCOS

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ABSTRACT

Studies over the last decade have demonstrated that some polycystic ovary syndrome (PCOS) patients have abnormal insulin sensitivity (insulin resistance), independently from being overweight or obese. This induces the risk of developing type 2 diabetes in such PCOS patients. The use of insulin sensitizers (i.e. metformin), reduces such metabolic, and most hormonal, impairments. As metformin often induces side effects, new integrative strategies have been proposed to treat insulin resistance, such as the use of inositols. Such compounds are mainly represented in humans by two inositol stereoisomers: myo-inositol (MYO) and D-chiro-inositol (DCI). MYO is the precursor of inositol triphosphate, a second messenger that regulates thyroid-stimulating hormone (TSH) and FSH as well as insulin and an epimerase converts MYO into DCI. Interestingly, predisposition to diabetes decreases the epimerase expression/function. Several studies indicated possible benefits of inositol therapy in PCOS. Recently, also the use of alpha lipoic acid has been demonstrated to be effective on the control of the insulin sensitivity, independently from endo-cellular inositol pathway, showing great efficiency in patients with familiar diabetes since diabetes reduces the expression/synthesis of mitochondrial LACS (lipoic acid synthase). Such integrative compounds, i.e. inositols and lipoic acid, have been proposed as putative and effective treatments to prevent from insulin resistance and improve insulin sensitivity in PCOS patients.

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