Journal of Diabetes Science and Technology
Volume 4, Issue 2, March 2010

ORIGINAL ARTICLES

Effects of Controlled-Release Alpha Lipoic Acid In Lean, Nondiabetic Patients with Polycystic Ovary Syndrome

Umesh Masharani, M.D.,[1] Christine Gjerde,[1] Joseph L. Evans, Ph.D.,[2] Jack F. Youngren, Ph.D.,[1] and Ira D. Goldfine, M.D.[1]

Abstract

Background:

The purpose of this study was to determine whether a preparation of controlled-release alpha lipoic acid (CRLA) influences features of the polycystic ovary syndrome (PCOS).

Methods:

We administered CRLA 600 mg twice daily for 16 weeks to six lean, nondiabetic patients with PCOS. Insulin sensitivity was measured by the euglycemic, hyperinsulinemic clamp. Plasma lipids were measured by vertical ultracentrifugation. Oxidative stress markers were measured in serum.

Results:

At the end of 16 weeks of CRLA treatment, there was a 13.5% improvement in insulin sensitivity as determined by the euglycemic, hyperinsulinemic clamp ($p < .03$). There was also a lowering of triglyceride levels ($p < .04$) and a shift in the distribution of low-density lipoprotein (LDL) particles toward the larger, more buoyant LDL subclass fraction. Two of the subjects who were not on oral contraception had an increased number of menstrual cycles. Controlled-release alpha lipoic acid treatment, however, was neither associated with an increase in plasma antioxidant capacity nor with a reduction in plasma lipid oxidation products.

Conclusions:

These data suggest that the CRLA has positive effects on the PCOS phenotype. The effects of CRLA, however, may have been exerted through a mechanism not involving changes in oxidative stress.

J Diabetes Sci Technol 2010;4(2):359-364

Author Affiliations: [1]Diabetes Center, Department of Medicine, University of California, San Francisco, Mt. Zion Medical Center, San Francisco, California; and [2]Receptor Bio, Inc., Redwood City, California

Abbreviations: (AMPK) 5′ adenosine monophosphate-activated protein kinase, (BMI) body mass index, (CRLA) controlled-release alpha lipoic acid, (DHEA) dehydroepiandrosterone, (FSH) follicular stimulating hormone, (HDL) high-density lipoprotein, (hsCRP) highly sensitive C-reactive protein, (iPF2α-III) 9-iso prostaglandin F2α, (LC/MS/MS) liquid chromatography tandem mass spectrometry, (LDL) low-density lipoprotein, (LH) luteinizing hormone, (PCOS) polycystic ovary syndrome, (TBARS) 2-thiobarbituric acid reactive substances, (TRAP) total reactive antioxidant potential

Keywords: cholesterol, insulin resistance, oxidative stress, triglycerides

Corresponding Author: Umesh Masharani, M.D., University of California, San Francisco, 400 Parnassus Ave., ACC 585, Box 1222, San Francisco, CA 94143; email address *umeshm@medicine.ucsf.edu*