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Ubiquinol supportive therapy in children with autism

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Abstract

Background: Autism is a spectrum of neurodevelopmental disorders with manifestation within 3 years after birth. Manifestations of autism include behavior problems (hyperactivity, self-harm, aggression), sleep and eating disorders. Oxidative stress and antioxidants could participate in pathobiochemical mechanisms of autism. We expected beneficial effects of ubiquinol (reduced coenzyme Q_{10}) supportive therapy in children with autism.

Methods: Twenty four children, aged 3-6 years, were included in the study according to the criteria DSM IV. Concentration of antioxidants ($CoQ_{10\text{-}TOTAL}$, γ-tocopherol, α-tocopherol, β-carotene) and lipid peroxidation were determined in plasma before and after three months of supportive therapy with liquid liposomal ubiquinol at a daily dose 2x50 mg ubiquinol. Psychological tests were evaluated by parents before and after 3-months of ubiquinol supplementation.

Results: Baseline plasma TBARS and antioxidants concentration were in reference values, not significantly changed after 3 months of ubiquinol treatment in autistic children. The best improvement in autistic symptomology was observed after three-months of ubiquinol supplementary therapy in children when the plasma concentration of the $CoQ_{10\text{-}TOTAL}$ increased over 2.5 μmol/L.

Conclusions: Beneficial effect of ubiquinol has been demonstrated for the first time in small sample of children with autism. We assume that plasma level of $CoQ_{10\text{-}TOTAL}$ could be used as a metabolic biomarker of ubiquinol supportive therapy. The results require further study.

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Biography

Anna Gvozdjakova, Ph.D., D.Sc., is Professor of Medical Chemistry and Biochemistry, Charles University in Prague, Czech Republic. Currently, he leads Mitochondrial Medicine and Coenzyme Q_{10}, Comenius University in Bratislava, Medical Faculty, Slovakia. He is Doctor of Natural Sciences, Doctor of Chemical Sciences (Ph.D.), Doctor of Biological Sciences (D.Sc.), and Assoc. Prof. of Clinical Chemistry. He has published more than 170 papers in journals and edited a book called Mitochondrial Medicine in 2008. He actively participated in Biomarkers 2012, Guangzhou; ICoQ_{10}A (2012-1998: Seville; Brussels; Kobe; Los Angeles; London; Frankfurt; Boston); MitoMed (2005-St. Louis; 2004-Pitsburgh); 2004- ICCD, Taipei; 2002- ISHR, Winnipeg; 2001-Mitochondria, San Diego.