

## Antioxidant Effects of Vitamin E in Diabetes Mellitus Type 1

Research Article

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### Abstract

In diabetes mellitus atherosclerosis is precocious, accelerated, and extensive, having influence to a large extent the secondary dislipoproteinemia to the hyper-glucemia, the lipoprotein's glucosilation produce changes in them same, that more aterogenics make them and generate free radicals that provoke oxidation of the apoprotein of the lipids and close macromoleculs, decided to evaluate the presence of oxidative stress in children with diabetes mellitus type1 and demonstrating the need of antirust as part of the pharmacologic therapy of this disease, selected 30 patients with Diabetes mellitus type 1, of the consultation of endocrinology of the Pediatric Provincial Teaching Hospital. Dr. Eduardo Agramonte Piña of Camaguey they took in the period of august to november of 2012. with ages between 5 and 16 years, under informed consent you show of blood for the determination of total cholesterol, Triglicerides, LDL Colesterol, HDL Colesterol, uric acid, vitamin C, bilirrubin, glucemia, ceruloplasmin, albumin and LDL oxidized, they administrated Vitamin E ( 400 mg daily ), during three months, coming true the determinations in each month and comparing the results obtained before and after therapy. Before the treatment 93 % of patients LDLox enlarged with at least one of the seric antioxidant lessened, when the levels concluded the study presnted levels lifted of glucemia and the 100 % of antirust they increased and the LDLox decrease was significant in 100 % of the patients, keeping invariable the levels of lipids. Data were processed by means of descriptive statistics, with absolute and relative frequency distribution, coming true a hypothesis testing for matching observations in each complementary.

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**Received:** March 15, 2013

**Accepted:** March 27, 2013

**Published:** March 29, 2013

**Citation:** Alarcón-Martínez Y, Alonso-Rodríguez D, Moreno-Téllez E, Idalia Morell Amarales (2013) Antioxidant Effects of Vitamin E in Diabetes Mellitus Type 1. Int J Clin Pharmacol Toxicol. 2(3), 63-65. doi: <http://dx.doi.org/10.19070/2167-910X-1300013>

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### Introduction

In the pathogenesis of the diabetes once the free radicals were implicated, in the sick persons with diabetes, the atherosclerosis it has between characteristic others to be precocious, accelerated, severe and extensive, at this moment has influence to a large extent the secondary dislipoproteinemia to the hyper-glucemia, the lipoprotein's glucosilation produce changes in them same, that more aterogenics make them and, besides,generate free radicles that provoke oxidation of the apoprotein of the lipids in the cellular core and of close macromoleculs [1,2,3].

The appearing of Diabetes mellitus ( DM ) in the tender age of life, represent a serious situation for what's difficult that is to maintain under good control these patients and for the frequent development of complications several years after initiate the dis-

ease. For it, it is necessary to accomplish a precocious, forceful and efficacious treatment to avoid or to postpone the presence of those complications, to teach a new style of life to those patients and to improve the prognosis and the living conditions of the same [4,5,6].

The free radicals are implicated not only in her the diabetic's complications, but also with the etiology of diabetes [7,8].

For it before exposed we proposed ourselves: Evaluating the antirust effects of vitamin And in children with Diabetes mellitus type1.

### Materials and Method

A study in 30 patients that attend the consultation of endocrinology of the Pediatric Provincial Teaching Hospital came true. Dr. Eduardo Agramonte Piña of Camaguey in the period of August to November of 2012.

### Criteria of inclusion

- Ambulatory patients with the diagnosis of diabetes mellitus type 1, with ages between 5-16 years and with over three years of evolution of the disease.

### Criteria of exclusion

- Patients hospitalized by decompensation of the disease.
- Patients with associated to pathologies diabetes mellitus.
- Patients that consume medications that get in the way in the levels of lipids and or antioxidant biological to determine.

Low consent informed they took of the parents like note of the

approval that the little boy will participate in investigation you show of blood for the multilevel determination of total cholesterol (enzymatic method), Triglycerides (enzymatic method), LDL cholesterol, HDL cholesterol (enzymatic method), uric acid (chemical Method with 2,4 dinitrofenilhidrazin), vitamin C (Gendrasik Grof), bilirrubin (modified Ravin), glucemia (Rapiglucotest), ceruloplasmin (enzymatic method) albumin (green bromocresol), and like marker of oxidative stress levels of LDL rusted determined themselves enzymatic method with Precipitation with PEG 6000).

The determinations of lipids, seric antioxidants administrated Vitamin E pills (400 daily mg), during three months, coming true themselves, and LDL rusted in each month, in order to demonstrate the presence and correction of the oxidative stress, the results obtained before compared and after the antioxidant therapy.

Data were processed by means of descriptive statistics, with absolute and relative frequency distribution, coming true a hypothesis testing for matching observations in each complementary accomplished.

### Results

They showed up before the treatment once the levels of vitamin were decreased C (33 %), ceruloplasmin (17 %) and albumin (63 %). One of the antioxidant determined decreasedly showed up at least in the patients' totality.

The decrease of the antirust stock triggers free radicals' accu-

mulation, for its part, you perform on the uric acid like antirust together with the vitamin C, the first one possesses a couple of electrons shared in that you perceive the reactive sorts of oxygen and it gives them up to the vitamin C, creating for oneself an innocuous complex that is eliminated easily at the organism, when you find the levels of one of them decreasedly the unbalance becomes established.

As to the profile lipidic triglycerides (13 %), the total cholesterol (50 %) and the LDLox detected incremented levels themselves than the principal marker of oxidative stress in 100 % of the patients.

Studies accomplished at the pediatric provincial teaching hospital's Clinical Laboratory Eduardo Agramonte Piña they have demonstrated than the sensibility of the LDL to oxidation the associate to the hiperlipemia is not, but to the degree of oxidative stress, which is able to unbalance the disease.

The numbers of glucemia found in 93 % of the patients lifted without yielding criteria of hospitalization, therefore it came to an end than the same they presented a bad metabolic control of the disease, which is attributed to in what's fundamental the diet.

When concluding the pharmacologic treatment could appreciate to to him an increment in the seric levels of the antirust determined, the levels of lipids like the total cholesterol and the LDL-C the equals, the HDL maintained C themselves it increased lightly and the rusted LDL decreased significantly, this suggests a decrease of lipoperoxide's levels and for there a bigger protection in front of the oxidative damage of the lipids, with which may

**Table 1: Half a levels of antioxidant and seric lipids in the patient elks and during the treatment with Vitamina And**

Parameter	Before the Treatment	1st Month	2nd Month	3rd Month
Vitamin C ( mmol/L)	35,8 26,7	38,6 23,8	44,5 22,6	52,9 29,1
Uric acid ( mmol/L))	214 41	236 29	250 46	282 106
Bilirrubin ( μmol/L)	7,5 2,4	8,7 1,3	11,1 0,9	12,8 9,0
Ceruloplasmin (mg %)	35,4 3,8	34,9 4,7	35,8 2,4	36,9 8,6
Albumin ( g/L)	32 6,3	33 9,1	34 3,5	36 8,6
Total cholesterol(mmol/L)	4,7 1,4	4,6 0,9	4,7 3,5	4,7 5,8
Triglycerides (mmol/L)	3,8 1,1	3,7 0,6	3,8 1,4	3,4 1,7
HDL C (mmol/ L)	1,9 0,3	1,8 0,5	2,1 0,1	2,4 0,8
LDL C (mmol/L)	3,0 0,6	3,2 0,4	3,0 0,2	3,4 0,8
LDLoxidada (μg/ml)	47,4 29,9	43 18,3	39 15,0	31,2 11,7

prevent him or delaying the possible complications of Diabetes mellitus in whose etiology the oxidative stress implicates itself.

### Conclusions

- Exists an oxidative stress in the children affected by diabetes mellitus type 1 for 76 % of diagnosed patients.
- The diet demonstrated a bad metabolic control of the associated to disease itself in 100 % of the patients.
- In the diabetic children with 400 daily mg of Vitamin E And during 3 months was able to correct the oxidative stress.

### Recommendations

- Including of diabetes mellitus type 1 to the pharmacologic treatment with vitamin E and to correct the stress oxidativo.
- Insisting on the metabolic control of the disease, on the basis

of achieving a balanced diet.

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