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### **Association of dietary vitamin C and e intake and antioxidant enzymes in type 2 diabetes mellitus patients.**

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#### **Abstract**

##### **BACKGROUND:**

Diabetes mellitus consist of a various metabolic diseases such as hyperglycemia, increase glycosylated hemoglobin (HbA1c) and disorder in antioxidant enzymes activity, hence supplementing with antioxidant nutrients, mainly vitamin C and E seems to reduce oxidative injure in patients with type 2 diabetes mellitus (T2DM).

##### **AIM:**

To evaluate outcome of vitamin C and E supplementation on type 2 DM patients.

##### **SETTING AND DESIGN:**

The study was completed in 170 T2DM on consumption of vitamin C, E, combination of C & E and placebo.

##### **MATERIALS AND METHODS:**

The cases groups of this study consist of two major groups, which were named supplementation and placebo group. The group of supplementation consisted of 3 sub-groups, which received three capsules per day for a phase of three months. The parameters such as HbA1c, glucose, superoxide dismutase (SOD) and glutathione peroxides (GSH) were evaluated in baseline and after three months with supplementation.

##### **STATISTICAL ANALYSES:**

The statistical analyses were evaluated with the use of mean  $\pm$  SD, ANOVA-test and paired-sample t-test.

##### **RESULTS:**

Mean age of 170 patients, 84 male and 86 female were  $53.82 \pm 5.26$  in the range of 30-60 years. The blood pressure results showed significant differences between the all supplement groups in baseline as compared to after receiving supplements ( $p < 0.05$ ). Use of vitamin C, E, and E & C showed significant differences in concentration of plasma FBS and HbA1c ( $p < 0.05$  &  $< 0.001$ ), but there was no significant differences in placebo groups. SOD and GSH enzymes levels showed a significant increased after consumption of vitamins in supplementation groups ( $p < 0.001$ ).

##### **CONCLUSION:**

This research confirmed that subjects with T2DM after three months supplementation of vitamins demonstrated significantly low level of hypertension, decrease levels of blood glucose, and increase SOD and GSH enzyme activity that can probably reduce insulin resistance by enhanced lowering oxidative stress parameters.