

## **Influence of trientine and flaxseed oil combination on the lipid profiles, antioxidant capacity, malon dialdehyde levels and regeneration of cardiovascular injury in diabetic rats**

**E. Heydarian<sup>1</sup>, A. Rezaei<sup>1</sup>, E. Abbasi Oshaghi<sup>2</sup>, N. Zynolebadi<sup>3</sup>, M. Moradi<sup>1</sup>**

<sup>1</sup>*Department of Basic Science, Tehran Payame Noor University, Tehran, Iran*

<sup>2</sup>*Department of Biochemistry, Hamedan University of Medical Sciences, Hamedan, Iran*

<sup>3</sup>*Department of Laboratory Science, Islamic Azad University, Borujerd, Iran*

**Background and Aims:** Flaxseed oil contains omega-3 fatty acids; On the other hand, trientine is useful for treating of diabetes through copper absorption.

**Methods:** Wistar rats randomly divided in 5 groups (n=8), 1: trientine (10mg/d) + flaxseed (4%), 2: only Trientine, 3: flaxseed oil, 4: control diabetic group without treatment and 5: normal control. After one month, the rats were anesthetized and blood samples were collected from the heart puncture. The heart was removed and washed by normal saline for histological study. Fasting blood glucose and lipid profiles measured by enzymatic method. Hemoglobin A1c and superoxide dismutase (SOD) were measured by ELISA kit. Also, antioxidant capacity (FRAP) and malondialdehyde (MDA) were calculated.

**Results:** lipid profiles, blood glucose levels and Hb A1C were significantly reduced ( $P < 0.05$ ) in diabetic group fed by trientine and flaxseed. HDL-c level increased significant ( $P < 0.05$ ) in group fed by trientine and flaxseed. FRAP concentrations in flaxseed oil group shown a significant decrease ( $p < 0.05$ ), changes were not significant in the group fed by trientine and group fed by trientine and flaxseed oil. SOD activity was significantly increased ( $p < 0.05$ ) in the group fed by trientine and flaxseed oil. Moreover SOD activity showed a significant difference ( $p < 0.05$ ) between the fed by flaxseed oil and diabetic group. Plasma MDA concentration showed a significant decrease ( $p < 0.05$ ) in the group fed by trientine and flaxseed oil. Also, Histological studies showed that the flaxseed oil and trientine has protective effect on cardiac tissue in diabetic rats.

**Conclusions:** therapy with trientine and flaxseed oil reduces considerably risk factors for diabetes

**Keywords:** Flaxseed oil; Trientine; Superoxide dismutase