

- 128.Colakogullari M, Ulukaya E, Yilmaztepe A, Ocakoglu G, Yilmaz M, Karadag M, et al. Higher serum nitrate levels are associated with poor survival in lung cancer patients. *Clin Bioch.* 2006;39(9):898-903.
- 129.Akbulut H, Altuntas F, Akbulut KG, Ozturk G, Cindoruk M, Unal E, et al. Prognostic role of serum vascular endothelial growth factor, basic fibroblast growth factor and nitric oxide in patients with colorectal carcinoma. *Cytokine.* 2002;20(4):184-90.
- 130.Gönenç A, Erten D, Aslan S, Akıncı M, Şimşek B, Torun M. Lipid peroxidation and antioxidant status in blood and tissue of malignant breast tumor and benign breast disease. *Cell biol Int.* 2006;30(4):376-80.
- 131.Mochizuki S, Toyota E, Hiramatsu O, Kajita T, Shigeto F, Takemoto M, et al. Effect of dietary control on plasma nitrate level and estimation of basal systemic nitric oxide production rate in humans. *Heart vessels.* 2000;15(6):274-9.
- 132.Rostami M, Jarfi M. The Evaluation of Serum Nitrite, Nitrate and Malonyldialdehyde Levels in Smokers. *MLJ* 2010;3(2).

Abstract:

Background: Esophageal cancer is the third most common malignancy in the digestive system worldwide. Risk factors for esophageal cancer include environmental, biological and genetic factors. Among them, environmental factors lead to develop esophageal malignancy through increasing oxidative stress. Haptoglobin is one of the most important protein in serum which has considerable role in suppressing oxidative stress. Also, it has been shown that p53 plays an important role in preventing tumor formation. The main aim of this study is evaluation the relation of nutritional risk factors and serum levels of p53 with different haptoglobin genotypes.

Methods and Materials: In a case-control study, 44 patients with esophageal cancer as case group and 44 healthy subjects as control group were followed for one year in Sayyad Shirazi hospital and Daziani clinic, Gorgan city. Informed consents were obtained from the participants at the first visit. After recording anthropometric factors, demographic and nutritional data were collected through public questionnaire and food frequency. Then, the serum levels of the p53, MDA and nitrate were measured and the types of haptoglobin polymorphism were determined in blood samples. Results were analyzed by t-test, ANOVA and chi-square, descriptive statistical tests.

Result: Results showed that there is a significant relationship between haptoglobin polymorphism and esophageal cancer, ($0.05 > p$). HP1-1 was the most frequent genotype in the case group while in control group; the HP2-2 genotype has the greatest statistical frequency. The mean of serum level of MDA in patients statistically was higher than the control group ($0.05 > p$) ($6.43 \pm 0.01 \text{ nmol/ml}$ vs. $4.08 \pm 0.1 \text{ nmol/ml}$). On the contrary, nitrate level in the treatment group was lower than the control group ($0.05 > p$) ($4.64 \pm 0.78 \text{ } \mu\text{mol}$ vs. $11.15 \pm 1.42 \mu\text{mol}$). In addition, although serum level of p53 was decreased in patients compared to the control group, this difference was not statistically significant. ($33.36 \pm 3.89 \text{ Pg/ml}$ vs. $40.13 \pm 7.18 \text{ Pg/ml}$).

Conclusion: The results of this study indicated that there is a significant correlation between haptoglobin polymorphism and esophageal cancer. Serum level of MDA was high in the patients group whereas, nitrate level was considerable in control group. Moreover, serum level of p53 was statistically insignificant in both groups. Therefore, it is suggested that The study conducted on more samples. Also, it is recommended that polymorphism of the p53 is determined in samples.

Key Words: Esophageal cancer, Oxidative stress, Haptoglobin, Protein p53, Nutritional factors, Gorgan