

## Relationship between Soil Selenium level and esophageal cancer: An ecological study in Golestan province of Iran

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### Abstract

**Background and Objective:** Golestan province, located in north of Iran has been known as a high risk area for esophageal cancer. The relationship between esophageal cancer and Selenium (Se) has been assessed in previous studies. This study was conducted to assess the relationship between Soil selenium levels and development of esophageal cancer in Golestan province of Iran.

**Materials and Methods:** In this ecologic study, Golestan province in northern Iran was divided into 135 blocks based on geographical altitude and longitude on the map. One Soil sample was collected from the center of each block. Selenium level in Soil samples was determined by flame atomic absorption spectrometry. Statistical analysis was performed by Pearson correlation and T-Student tests.

**Results:** The mean $\pm$ SD of Soil Selenium level in Golestan province was 3.7 $\pm$ 1.61 mg/kg. There was a positive correlation between Soil level of Selenium and esophageal cancer rates in this area ( $P=0.03$ ), (Pearson correlation coefficient=0.19). The Soil Selenium level for high risk and low risk area for esophageal cancer were (4.13 mg/kg) and (3.39 mg/kg) respectively ( $P=0.01$ ).

**Conclusion:** This study showed that there is high Soil Selenium level in Golestan province in north of Iran. Also it is found to be a significant positive relationship between Soil Selenium level and esophageal cancer rate in this area.

**Keywords:** Esophageal cancer, Soil Selenium, Golestan province, Iran

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