

Assessing the Influence of Cigarette Smoking on Serum DNase Enzyme Levels and Antioxidant Systems among Male University of Technology Students, Iraq

Alaa Sh. Abdulbari, Ph.D* Noor Nayyef Oudah, Ph.D** Zainab J. Abdul-zahra, MSc* Hamid K. AL-Tameemi, Ph.D**
Nooralhuda Aljawhar, MSc***

ABSTRACT

Cigarette smoking poses a major public health challenge, contributing to a substantial number of fatalities globally. It's firmly established as risk factor for various serious conditions, including oral and oesophageal carcinomas, lung cancer, and liver cirrhosis. Our research hypothesis posited that cigarette smoking induces a depletion of serum antioxidants, thereby impairing the efficacy of body's antioxidant defence mechanisms and facilitating the onset and progression of various pathological conditions. This study aimed to evaluate the impact of smoking on serum DNase I, DNase II, MDA, and GSH levels among university students. Blood samples were collected from 40 male and 40 male non-smokers over three months from November to February. Alkaline DNase activity was estimated using method modified by Retiza, Acid DNase activity was assessed using a modified version of Kunitz, MDA was measured by the thiobarbituric acid method, GSH level determined spectrophotometrically using 5,5-dithionitrobenzoic acid (DTNB). The results showed that serum alkaline DNase, Acid DNase, and MDA levels were markedly elevated among smokers relative to non-smokers, while serum GSH levels in were significantly reduced in smokers compared to their non-smokers counterparts. In conclusion, these findings suggest that the enzymes and oxidative stress biomarkers assessed in this study could serve as valuable indicators for identifying smokers at higher risk of contributing to numerous pathological conditions.

Keyword: Cigarette; Smoking; Alkaline DNase; Acid DNase; Antioxidant

Bahrain Med Bull 2025; 47 (2): 2141 - 2144

* Applied Sciences Department
University of Technology-Iraq, Baghdad, Iraq.
** College of Medical and Health Techniques
University of Bilad Alrafidain, Diyala, Iraq.
*** Department of Microbiology
College of Veterinary Medicine, Diyala University, Diyala, Iraq.
E-mail: alaa.s.abdulbari@uotechnology.edu.iq