

## STUDY ON THE EFFECT OF CIGARETTE SMOKE ON HUMAN HEALTH

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**ABSTRACT :** Smoking is considered as one of the major lifestyle factors influencing the health of human body. Current study was aimed to investigate the effect of smoking on immunity comparing to nonsmoker via assessment levels of total white blood cells (WBC), C. reactive protein (CRP), interleukin-6 (IL-6), zinc and copper levels. **Samples & methods:** Fifty smokers and forty nonsmoker persons were included the study, blood samples (5 ml) were taken from both (smoker & nonsmoker) persons to investigate WBC, Hb and PCV % by auto analyzer hematology, IL-6 by ELISA technique and C. R. P. by i- Chroma device as well as levels of zinc and copper were estimated by absorption spectrophotometer. The results were indicated to increased significantly ( $P < 0.05$ ) the mean value of WBC, Hb, PCV, IL-6, CRP and copper in serum of smoker persons as compare with nonsmoker persons while the mean value of zinc was decreased significantly ( $P < 0.05$ ). cigarette smoking effect on immune system and blood contents of smoker persons.

**Key words :** Copper, zinc, CRP, cigarette, IL-6, smoking.

### INTRODUCTION

Tobacco is the chief cause of avoidable death internationally<sup>1</sup>. Consuming tobacco might lead to diseases influencing the lungs, heart, and liver. Smoking is a main risk factor for chronic obstructive pulmonary disease (chronic bronchitis and emphysema as well), heart attacks, mouth, larynx and pancreatic cancer. The effects depend on how much the person smokes and on the duration that a person smokes. Ingesting of nicotine with smoking is the quick and effectual methods of introducing it into the bloodstream. It is taking virtually ten seconds for the material to reach the brain<sup>2</sup>. Smoking is a chief risk factor for heart attacks, myocardial infarction, emphysema, and cancer<sup>3</sup>. Tobacco smoke exposure to neutrophils elevates the oxidative burst causing tissue destruction by a direct toxic effect<sup>4,5</sup>.

Immune system could be affected by cigarette smoking, and could be a risk factor for osteoporosis. Osteoporosis results from decreasing the lymphocytes that produced by bone marrow. This mechanism could be happen when ones exposed to cigarette smoke. Reduce the time of polymorph nucleus (PMN) in the post mitotic pool of the bone marrow, and increases the size of the mitotic and post mitotic pools of PMN result spend through stimulating the bone marrow in heavy smokers' peoples. Thus, leukocytosis has seen in smokers as a result of these changes<sup>6,7</sup>. Increasing in number of immune cells

and mast cells are some of systemic immune alterations, in addition to several pulmonary disorders, where arisen due to cigarette smoking<sup>8</sup>. Tobacco smoke contains numerous compounds; the important substance of material is being the carcinogen (such as poly cyclic aromatic hydrocarbons), nicotine, carbon monoxide, irritant substances and other gases<sup>9</sup>. Some metabolic and biological processes of our bodies have effected by smoking including effects the hormones secretion<sup>10</sup>. Depletion in minerals and important nutrients including zinc are risks factors of nicotine addiction<sup>11</sup>. Zinc also inhibits the aromatase enzyme that converts testosterone in to excess estrogen; the high estrogen activity results in increased risk of heart disease, and this support the fact the smoking is a risk factor of heart diseases<sup>12, 13</sup>. Cigarette's smoke may be related to etiology of cancer and various diseases due to generate a large number of free radicals<sup>14, 15</sup>. Tar, carbon dioxide, carbon monoxide, nicotine, hydroquinone, ammonia, acetone, cadmium and nitrogen oxides are major components of smoke that might lead to numerous of the venomous effects<sup>16, 17</sup>. Most of these agents are known to be toxic to the cells and carcinogenic<sup>18</sup>. Indeed, nicotine and tar have shown to be immunosuppressive by affecting the innate immune response of the host and growing the susceptibility to infections. High levels of nicotine induce greater immunologic changes than lower levels of this compound<sup>19</sup>. Serum C - reactive protein (CRP), the main