

Study The Effect Of E-Cigarette Vaping On Hematological Parameters In Adult Male

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Abstract:

Research on the safety of electronic cigarettes (or "e-cigarettes") has been requested by the World Health Organization. In the present investigation, blood samples were taken from Seventy guys who used e-cigarettes while they were 20 to 24 years old and from thirty males who were unable to use cigarettes during the same age range. The goal of the study was to investigate the acute effect of e-cigarettes on complete blood count (CBC) indicators in adult males. Venous blood placed in an EDTA tube was used to get a sample of whole blood. It is utilized for testing the whole blood count.

According to the results, men who use e-cigarettes don't seem to have an impact on CBC indices. Contrarily, smoking e-cigarettes raises white blood cell count, lymphocyte percentage, and granulocyte percentage. Since the nicotine concentration in the liquids used for e-cigarettes can vary greatly, we advise further investigation into chemical safety problems and other areas of consumer product safety. Additionally, suitable rules must be created for the application and commercialization of this technology in order to guarantee the security of consumer goods.

Key word: *E-Cigarette, Vaping, Complete blood count, hematological parameters.*

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I. Introduction:

Over 5 million middle and high school children and 10 million adults in the US presently use electronic cigarettes (also known as E-cigarettes or E-cigs), also known as the electronic nicotine delivery system (ENDS) [1,2]. The basic components of an e-cigarette, despite their fast evolution, are a battery and heating coil that aerosolize an e-liquid solution including the solvents propylene glycol and vegetable glycerin to provide nicotine for inhalation. The liquid for electronic cigarettes comes in a range of flavors, which adds to its allure for young users. The use of e-cigarettes worsens the chance of developing a nicotine addiction, interferes with teenagers' normal brain development, and increases the possibility that they will smoke traditional cigarettes, reversing the downward trend in juvenile tobacco use [3,4].

Investigations on the health impacts of E-cigarette smoking or vaping are urgently needed as a result of the E-cigarette's explosive growth in popularity among adults and, more worrisomely, among teenagers. The need to better understand the health-related effects of chronically inhaling E-cigarette smoke is underscored by the ongoing promotion of E-cigarette safety over combustible cigarettes. The "safe" components of e-cigarette aerosols include ultrafine particles, nicotine, volatile organic compounds, heavy metals including nickel, formaldehyde, and acrolein, and flavorings. Chronic inhalation of these dangerous substances is expected to have detrimental effects on health [5]. Exposure to e-cigarettes can reduce innate immunity in the lungs and boost the inflammatory profile of bacterial and viral respiratory infections [6,7].

II. Material and methods:

In the current investigation, blood samples were taken from Seventy guys who were E-cigarette users between the ages of 20 and 24 and from Thirty guys who were not smokers in the same age range. Venous blood placed in an EDTA tube was used to get a sample of whole blood. For full blood count tests, it is employed. We measured the white blood cell, red blood cell, hemoglobin, hematocrit, and platelet counts using a total of 2 ml of whole blood. Additionally, the total number and percentage of several white blood cell subtypes, especially lymphocytes, monocytes, and granulocytes, were determined. A DYMIND auto-analyzer was used to evaluate each and every sample of blood.

Analytical statistics: Mean estimation and a T test for comparing data were utilized in the data analysis using the SPSS software.

III. Result:

From total 100 male recruited in our study, the mean age was (23 ± 0.24 years) most of them smoke e-cigarette with different level of nicotine.

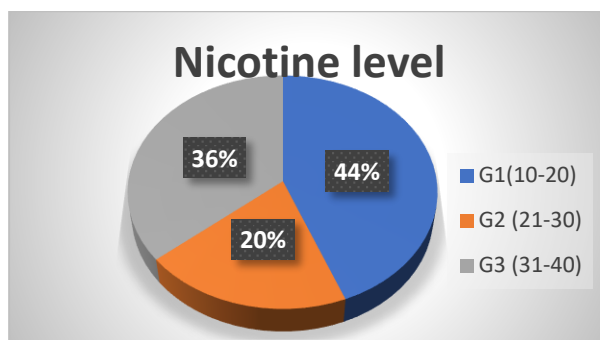


Figure (4-1) demonstrate the three group of male according to nicotine uses in e- cigarette smokers.

From this result we showed 44% of e- cigarette smokers use nicotine level arrange between (10 to 20) and 20% were used nicotine level arrange between (21 to 30) whereas 36 % of e- cigarette smokers use nicotine level arrange between (30 to 40).

Figure (4-2) and (4-3) and (4-6) were showed the non-significant differences in RBC count, HB concentration, HCT % and platelet count in e- cigarette smoker’s male as a compared with nonsmoker male. Whereas the result in figure (4-4) (4-5) was showed the significant elevation ($0 \leq 0.05$) of WBC count, lymphocyte percentage and granulocyte percentage in e- cigarette smoker’s male as a compared with nonsmoker male.

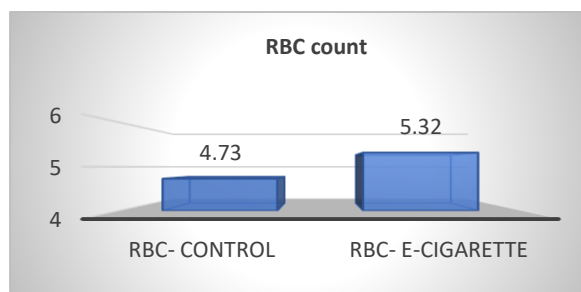


Figure (4-2) demonstrate the RBC count in e- cigarette smoker’s male and nonsmoker male.

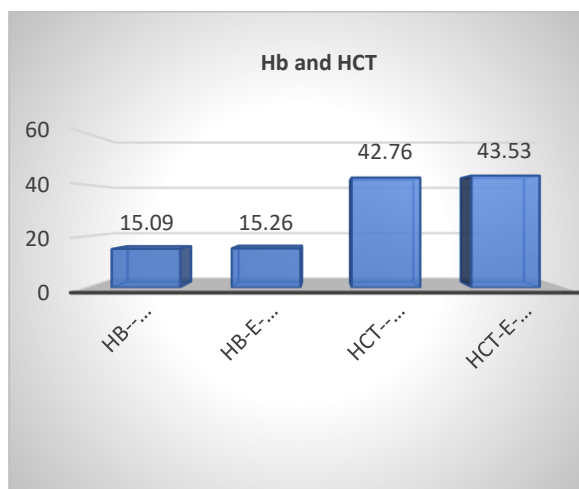


Figure (4-3) demonstrate the HB concentration and HCT% in e- cigarette smoker’s male and nonsmoker male.

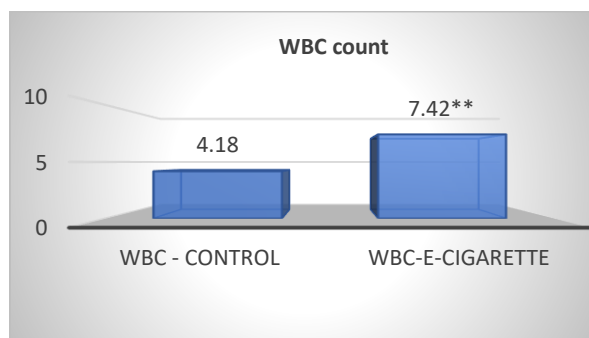


Figure (4-4) demonstrate the WBC count in e- cigarette smoker's male and nonsmoker male.

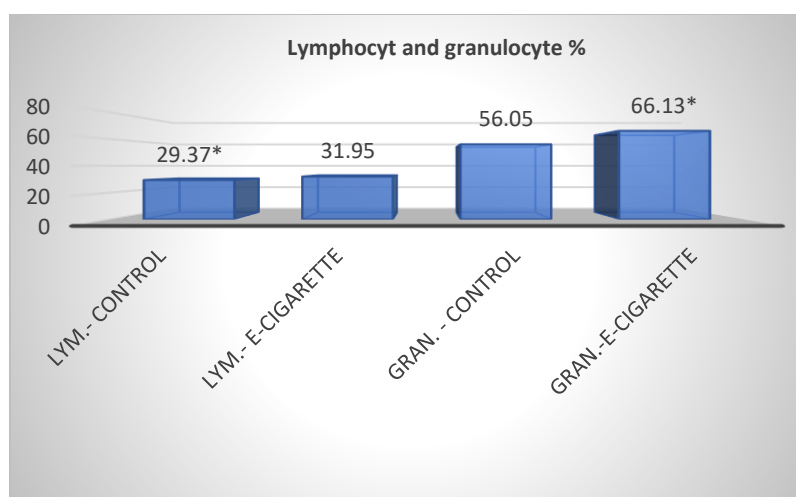


Figure (4-5) demonstrate the Lymphocyte percentage and granulocyte% in e- cigarette smoker's male and nonsmoker male.

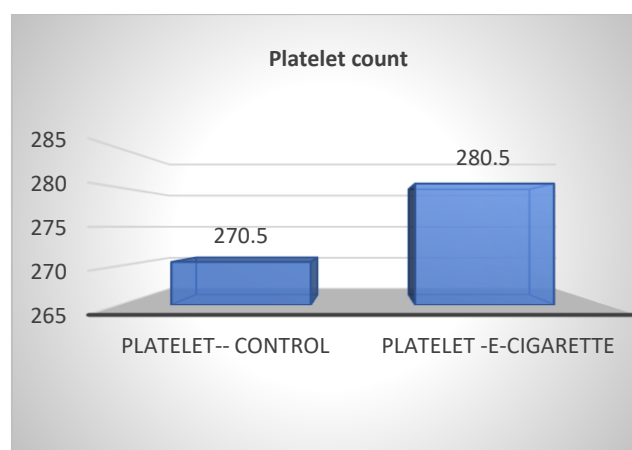


Figure (4-6) demonstrate the Platelet count in e- cigarette smoker's male and nonsmoker male.

IV. Discussion:

Our findings imply that male smokers of electronic cigarettes had no effect on the CBC indicators other than an increase in white blood cell count, lymphocyte percentage, and granulocyte percentage.

The findings regarding active tobacco cigarette usage are consistent with existing data demonstrating an increase in leukocytes and granulocytes after acute smoking [8]. Studies also indicate that regular e-cigarette use increases white blood cell count. Additionally, findings from the primary proteins of acute inflammatory burden are consistent with the systemic inflammation seen after acute e-cigarette use. Interleukins 4, 5, and 6 as well as interferon gamma specifically exhibit a sustained rise after inhaling tobacco smoke [9], whereas C-reactive protein levels are greater in those who are passively exposed to tobacco cigarette smoke on a regular basis [10].

White blood cells in circulation that are exposed to the body's environment have a direct role in the low-grade inflammation linked to atherosclerosis. As a result, our findings imply that the pathophysiological process

behind the biological effects of smoking may be linked in the rise in circulatory inflammatory markers, which was seen even with the use of e-cigarettes. In this context, it is crucial to emphasize that the tested e-cigarettes had no statistically significant effect on the CBC indices, at least not during the study's assessment of the acute phase. Exploring the acute phase of e-cigarette vapor inhalation on CBC, one of the most frequently requested blood tests in healthcare, is crucial and constitutes an essential first step in the pertinent research agenda [11]. This is true even though it is crucial to look into the effects of long-term e-cigarette use.

V. Conclusion and recommendation:

From the foregoing, it can be inferred that male e-cigarette smokers do not seem to have an impact on CBC indices for the e-cigarettes evaluated in the current study. The white blood cell count, lymphocyte percentage, and granulocyte percentage rise after using an e-cigarette, in contrast. Since the nicotine level in the liquids used for e-cigarettes might differ significantly, we advise further study to assess chemical safety hazards and other consumer product safety aspects. For the deployment and commercialization of this technology, suitable rules must also be developed in order to guarantee the security of consumer goods.

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