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Detection of heavy metals in smokers and non- smokers blood collected from different area of district Karak, KP, Pakistan

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Abstract
The accumulation of heavy metals above their safe levels in the blood can result in certain diseases. They may damage or reduce mental and central nervous functions, lower energy levels, can cause damage to blood composition, liver, lungs, kidney, and other vital organs. The selected metals in the blood of smokers and non-smokers in 12 volunteers every one is different. The range of copper in smoker blood was 0.70 to 0.02ppm. While the range of copper in non smoker blood was 0.72 to 0.03 ppm. The range of Chromium in smoker blood was 3.80 to 1.72ppm. While the range of non smoker blood was 2.53 to 1.99ppm. The range of iron in smoker blood was 53.93 to 37.98ppm. While the range of non smoker blood was 40.17 to 31.01ppm.

Keywords: Heavy metals, smokers, non- smokers blood

Introduction
Inhabitants on exposure to strong injurious substances present in the atmosphere, including breathing air, water, food and the surfaces they touch. The importance of public health protection must be kept in mind as it is required to reduce the chances of exposure to harmful environmental agents, which affects directly and indirectly. The human health leading to a marked increase in death rates, calamitous diseases, and bodily distress. Certain chemicals present in the environment has become absolutely necessary to humans in regard to maintaining activities and development to protect and control most of the diseases,. The last aspect addresses to agricultural productivity factor too. In the 20th century, both in developed and in developing countries the industrial growth reached to a great height and is predicted to go up which will certainly lead to a widespread increase of these harmful substances in the environment [1]. For the last few decades the term heavy metals have been coined and very often used in various research works highlighting the side effects of chemicals and their safe use. Heavy metal term is related to inactivity and toxicity. This term is used widely leading to a common confusion the importance of heavy metals. It will be true to say that all heavy metals have the capability to be toxic. So it's now became necessary to study the safe use of heavy metals and knowing the relationship of heavy metals with fundamental chemistry [2]. Not all but some metals are necessary for human health in a definite amount, and its absences or deficiency can cause an undesirable effects on human health which can only be recovered by that metals, the effects should also be referred as a dose response curve. This term is often used falsely, but must be highlighted where needed by organism [3]. It is an ancient phrase which is now out of date, it implies that the non essential metals might disprove health. This term is often used limply to refer to both elements and its compound. It, s so different from essential metals in respect that it, s presence can have positive effects, but its absence does not have any damage [4]. Xenobiotic metals occur in nature, have no significant role in the body, but their presence can cause health effects. All substances are societal when given in high dose is the basic rule for toxicity. This degree of toxicity varies from metals to metals and organism to organism [5]. These are the metals found in a very, very low concentration in parts per million(ppm) or less, in some special sources, e.g., blood ground water and soil, etc. this term has enigmatic, a perplexing overtone of highly low nutritional requirement not often but sometimes by specific organisms. Finally, we concluded that such type of metals does not affect the organisms in a very low concentration but this low concentration varies from one

organism to another [6]. The aim of the research was to find out the heavy metals in smokers and non- smokers blood collected from different area of district Karak, KP, Pakistan

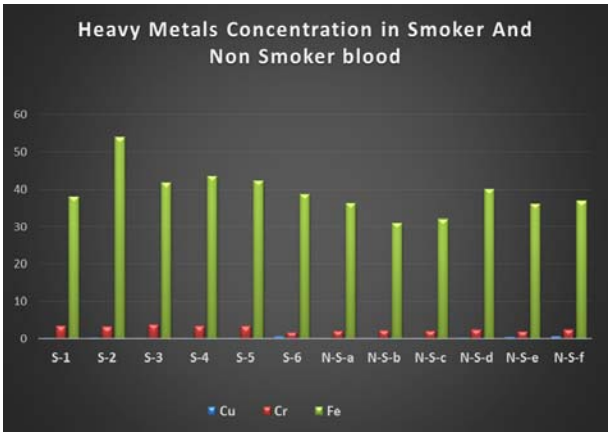
Materials and Methods

Blood was collected from the volunteers, both smokers and non smokers belonging to different areas of district Karak in Jan-Feb 2017 in order to analyze it for heavy metals by the comparison of smoker and non smoker and it's effects on human health. Blood samples were collected from the above mentioned area in district Karak. Blood 5ml in volume was collected from each volunteer by using sterile syringes and then were transferred to the EDTA blood tubes. Then they were kept at low temperature (-6) for at least 24 hours. All the blood samples are prepared for the acid digestion for the determination of heavy metals. The 5ml blood samples treated with 15ml HNO_3 at least 24 hours at 25, then 15ml $HCLO_4$was added to the solution. Then the flask is heated on the hot plate in which the volume reduces to 2ml. Then the solution is cooled by the filtration. The above process is used for each Samples for the determination of heavy metals.

Result and Discussion

Table 1: Detection of heavy metals in smokers and non- smokers blood collected from different area of district Karak, KP, Pakistan

Sr	Sample Name	Mineral's in ppm		
		Cu	Cr	Fe
1	S-1	0.07	3.44	37.98
2	S-2	0.28	3.19	53.93
3	S-3	0.11	3.80	41.67
4	S-4	0.07	3.31	43.55
5	S-5	0.02	3.29	42.36
6	S-6	0.70	1.72	38.60
7	N-S-a	0.03	2.09	36.28
8	N-S-b	0.07	2.24	31.01
9	N-S-c	0.19	2.08	31.98
10	N-S-d	0.29	2.53	40.17
11	N-S-e	0.47	1.99	36.25
12	N-S-f	0.72	2.49	36.81



Graph 1: Detection of heavy metals in smokers and non- smokers blood collected from different area of district Karak, KP, Pakistan

Copper is well known Metal used in the daily routine present in many types of food and water. Human needs copper for their growth and development and their agencies are eating, breathing, and drinking. Human take in about 2-3mg/day copper daily. Human needs copper in trace amounts and its larger amount cause severe problems like headache, nose irritation, flu-like condition, vomiting and diarrhea, etc. Higher amount of copper cause Kidney failure and even cause death. Deficiency of copper cause anemia. The analyzed Data of both Smoker & non Smoker Blood is given in the above Table. No.1.Copper range in Smoker Blood as 0.02 – 0.70ppm. Copper range in non Smoker as 0.03 – 0.72ppm. Chromium Metal exists in three possible Oxidation states, 0, +3, +6. Chromium +3 is in essential nutrients and found in foods, crops and vegetables. Chromium +6 is very toxic to those people who smoke cigarettes. Chromium causes different diseases, like stomach diseases, weak immune system and respiratory diseases. Chromium ranges in the Smoker blood as 1.72 – 3.80ppm. Chromium ranges in non Smoker blood as 1.99 – 2.53ppm. Iron metal is considered as a basic need for human body. Iron can be intake in food up to 10-60mg/day. Iron is present both in animals and plants. In the human body, it is a major part of human blood (hemoglobin). Which act as oxygen carrier, electron transfer. Iron helps in DNA synthesis, protein synthesis, fat and carbohydrate synthesis. Iron helps in oxidation and low level of iron cause nose bleeding and gasto-intestinal infection. Normal range of iron in human blood as 60 – 70 mcg/dl. Analyze data of iron in smoker blood as 37.98 – 53.93ppm. Iron in non smoker as 31.01 – 40.17ppm.

Conclusion

From the above discussion, it is clear that metal like Copper, Chromium, and Iron are detected in both Blood i.e Smoker & non Smoker. The concentration of these metals is in greater amount in Smoker Blood as compared to non smoker blood.

References

1. Calderon J, Ortiz-Perez D, Yanez L, Diaz-Barriga F. J Ecotox Environ Safe. 2003; 56:93-103.
2. Morra P, Bagli S, Spadoni G. J Environ. Int. 2006, 32:444-454.
3. SANTOS EE, LAURIA DC, PORT CL. J Sci. Total. Environ. 2004, 327:69-79.
4. Kakkar P, Jaffery FN. J. Environ. Txicol. Phar. 2005; 19:335-349.
5. Hewitt PJ. J Environ. Geochem. Health. 1988, 10:113-116.
6. Cirone PA, duncan PB. J Hazard Mater. 2000; 78:1-17.