

Sudan University of Science and Technology
College of Graduate Studies and Scientific Research

Assessment of the Levels of Serum Iron and Magnesium in Sudanese Cigarette Smokers

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال الله تعالى

يَا أَيُّهَا الَّذِينَ آمَنُوا لَا تَأْكُلُوا أَمْوَالَكُمْ
بَيْنَكُمْ بِالْبَاطِلِ إِلَّا أَنْ تَكُونَ تِجَارَةً عَنْ
تَرَاضٍ مِنْكُمْ وَلَا تَقْتُلُوا أَنْفُسَكُمْ إِنَّ
اللَّهَ كَانَ بِكُمْ رَحِيمًا

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إلى الذي لا أستطيع أن أوصفه بأجمل الكلمات وابلغ
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،،إلى التي لا أستطيع أن أكتب لها حرفاً لأوفيها حقها
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،، إلى من علموني وأضاءوا لي درب المعرفة

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Contents

Dedication	I
Acknowledgements	II
Abstract (English)	III
Abstract (Arabic)	IV
List of tables.....	VII
List of figures.....	VIII
Abbreviations.....	IX

Chapter one

1.1 Introduction	1
1.1.1 Objectives	3
1.2 Literature review	4
1.2.1 Tobacco smoking	4
1.2.1.1 Tobacco	4
1.2.1.2 Chemicals in cigarettes	4
1.2.1.3 Smoking's physiology	4
1.2.1.4 Smoking's prevalence and mortality	5
1.2.1.5 Health effects of cigarette smoking	6
1.2.1.5.1 Immediate effects of cigarette smoking	6
1.2.1.5.2 Smoking and skin	10
1.2.1.5.3 Smoking and lung	10
1.2.1.5.4 Smoking and eye	10
1.2.1.5.5 Smoking and bone	10
1.2.1.5.6 Smoking and cognitive functions	11
1.2.1.5.7 Smoking and weight	11
1.2.1.5.8 Smoking and diabetes	11
1.2.1.5.9 Smoking and wound healing	11
1.2.1.5.10 Smoking and pregnancy	11
1.2.1.5.11 Smoking and cancer	11
1.2.1.5.12 Smoking's benefits	12
1.2.2 Iron	13
1.2.2.1 Iron distribution	13
1.2.2.2 Iron functions	13
1.2.2.3 Iron metabolism	13
1.2.2.4 Iron deficiency	15

1.2.2.5 Iron overload	15
1.2.2.6 Hereditary haemochromatosis	16
1.2.2.7 Diagnostic tests for iron status	17
1.2.3 Magnesium	18
1.2.3.1 Magnesium distribution	18
1.2.3.2 Magnesium functions	18
1.2.3.3 Magnesium metabolism	18
1.2.3.4 Hypomagnesaemia	19
1.2.3.5 Hypermagnesaemia	20
1.2.4 Iron and cigarette smoking	21
1.2.5 Magnesium and cigarette smoking	21

Chapter two

2.1 Materials and methods	22
2.1.1 Subjects	22
2.1.2 Methods	22
2.1.2.1 Subjects history	22
2.1.2.2 Samples collection	22
2.1.2.3 Measurement of serum iron	22
2.1.2.4 Measurement of serum magnesium	23

Chapter three

3. Results	24
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Chapter four

4.1 Discussion.....	32
4.2 Conclusion.....	34
4.3 Recommendations.....	35

References	36
Appendix-1.....	45
Appendix-2	46
Appendix-3	47

Dedication

To my mother.

Who gave me care & love.

To my father.

**Who is the sources of help
fullness.**

**To my university (Sudan
university of science and
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Which gave birth to my real life.

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guidance.

Abstract

This cross-sectional study was carried out to determine the effect of cigarette smoking on serum iron and magnesium levels. During the period of 5-30 April 2011. Seventy volunteers were smoker males (aged 18-35 years old), and thirty non smoker males (aged 18-35 years old, as control group) were enrolled in this study, they were from Khartoum (n=34), Khartoum-north (n=19) and Omdurman (n=47). Three ml of fasting venous blood were collected from each volunteer, the serum obtained and analyzed colorimetrically.

Statistical analysis of the obtained results revealed that; serum iron was significantly higher in smokers (140 ± 52) $\mu\text{g/dl}$ when compared to non smokers (90 ± 22) $\mu\text{g/dl}$, (p value = 0.000), serum iron did not change due to age difference (p value = 0.2). Tribal origin had an effect on serum iron; it was significantly altered (p value = 0.04). There was insignificant difference between the mean of serum iron in smokers who smoked ≤ 15 cigarettes per day (138 ± 50) $\mu\text{g/dl}$ compared to those who smoked ≥ 15 cigarettes per day (145 ± 55) $\mu\text{g/dl}$, (p value 0.6), there was no correlation between serum iron and the number of cigarettes per day, also there was no correlation between serum iron and the duration of smoking.

Also the analysis showed that; serum magnesium was significantly lower in smokers (1.4 ± 0.40) mg/dl when compared to non smokers (2.2 ± 0.39) mg/dl , (p value 0.000), serum magnesium did not change due to age difference (p value 0.4). Tribal variation did not affect serum magnesium (p value 0.2), there was significant difference between the mean of serum magnesium in smokers who smoked ≤ 15 cigarettes per day (1.5 ± 0.36) mg/dl compared to those who smoked ≥ 15 cigarettes per day (1.3 ± 0.35) mg/dl , (p value 0.03), there was a weak negative correlation between serum magnesium and the number of cigarettes per day (correlation coefficient $r = -0.2$), and there was a weak negative correlation between serum magnesium and the duration of smoking (correlation coefficient $r = -0.3$).

المستخلص

اجريت هذه الدراسة الم قطعية لمعرفة تأثير تدخين السجائر على مستويات عنصري الحديد و المغنيسيوم في مصل الدم. تم جمع 70 عينة دم من مدخني السجائر و 30 عينة دم من اشخاص غير مدخنين (العينة الضابطة) من مختلف أنحاء ولاية الخرطوم (الخرطوم, امدرمان, والخرطوم بحري) في الفترة من 5 إلى 30 ابريل 2011.

اظهرت نتائج هذه الدراسة أن مستوى الحديد مرتفع لدى المدخنين (52 ± 140) م مقارنة بالعينة الضابطة (22 ± 90) مايكروجرام /ديسيلتر وكان مستوى المعنوية (0.000). وأن مستوى الحديد لا يتأثر باختلاف اعمار المدخنين ولا يتأثر بعدد السجائر التي تدخن في اليوم ومدى فترة التدخين, لكنه يتأثر بالاختلاف العرقي و القبلي.

كما اظهرت نتائج الدراسة أن مستوى المغنيسيوم منخفض لدى المدخنين (0.40 ± 1.4) م مقارنة بالعينة الضابطة (0.39 ± 2.2) مليجرام /ديسيلتر وكان مستوى المعنوية (0.000). وأن مستوى المغنيسيوم لا يتأثر باختلاف اعمار المدخنين ولا باختلافهم العرقي, لكنه يتأثر بعدد السجائر و مدى فترة التدخين.

List of tables

Table (1.1): Recommended dietary allowance for iron	15
Table (1.2): Recommended dietary allowance for magnesium	19
Table (3.1): Age group and Percentage	26
Table (3.2): Serum magnesium and number of cigarettes per day	27

List of figures

Figure (3.1): Tribe distribution	28
Figure (3.2): Mean of serum iron in smokers and non smokers	29
Figure (3.3): Serum iron and tribes	30
Figure (3.4): Mean of serum magnesium in smokers and non smokers...	31

Abbreviations

AMD: Age-related Macular Degeneration.

ΔA : delta Absorbance.

BC: Before Christ.

BMP: Bone Morphogenic Protein.

BRCA: breast cancer type 1 susceptibility protein.

C: Concentration.

CAB: Chromazurol B.

COPD: Chronic Obstructive Pulmonary Disease.

CTMA: Cetyltrimethylammonium bromide.

DMT1: Divalent Metal Transporter1.

DNA: Deoxy ribonucleic acid.

ET-1: Endothelin -1.

GEDTA: Glycoletherdiamine-N, N, N,N-tetraacetic acid.

GFR: Glomerular Filtration Rate.

HDL: High Density Lipoprotein.

HH: Hereditary Haemochromatosis.

LDL: Low Density Lipoprotein.

PCT: Porphyrin Cutanea Tarda.

pH: Potential of Hydrogen.

PTH: Para Thyroid Hormone.

RBCs: Red Blood Cells.

RDA: Recommended Dietary Allowance.

RNA: Ribonucleic acid.

SPSS: Statistical Package for Social Science.

STD: Standard.

TIBC: Total Iron Binding Capacity.

WHO: World Health Organization.





