Study the effects of folic acid and vitamin B_{12} on the chromosomal structure and DNA content in *Albino mouse*

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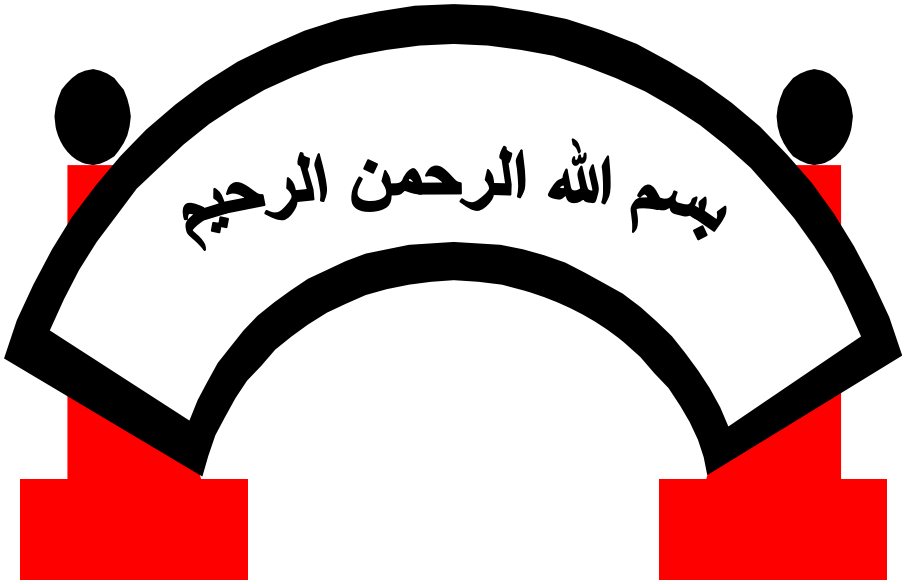

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ABSTRACT

The aim of this work is to study the effects of folic acid and vitamin B_{12} deficiency on the mice. Mice were divided into five groups. The first group served as control while the other four were treated with vitamin deficient diet, vitamin folic acid only, vitamin B_{12} only and both vitamin folic acid and vitamin B_{12} respectively. Each treated animal was intraperitoneally injected every day for 28 days with the selected dose. Treatment with vitamin deficient diet to male mouse induced chromosomal aberrations. These were centromeric attenuation, gap, fragment, deletion, ring, centric fusion, beaded chromosomes and polyploidy. Chromosomal aberrations were significantly increased by time. In the molecular genetic studies, nine primers were tested to perform Randomly Amplified Polymorphic DNA-Polymerase Chain Reaction (RAPD-PCR) analysis, but only four of them were successful in the amplification of DNA to reveal the differences between the five groups. The damage caused in the testes of mice after vitamin deficiency treatment displayed variable changes in both the seminiferous tubules and the interstitial tissue. Some tubules were histologically altered, whereas others were not affected. The affected seminiferous tubules showed a variety of anomalies and histological changes in the spermatogenic cells. On the other hand, Sertoli cells of all treated groups appeared normal and were not affected by the treatment with vitamin deficiency. In all groups, there were significant decrease in erythrocyte count, leucocyte count, haemoglobin content and mean corpuscular haemoglobin.

Key words: Vitamins, Folic acid, B_{12}, Chromosomes, DNA, RAPD-PCR, Blood, Histology, Histopathology, Testis, Mice.

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List of Abbreviation

ACF	**: Adenomas and aberrant crypt foci**
Bd	**: Band density**
Bch	**: Beaded chromosomes**
C	**: Congestion**
Ca	**: Centromeric attenuation**
CF	**: Centric fusion**
Cg	**: Chromatid gap**
Chg	**: Chromosome gap**
CL	**: Central lumen**
Cm	**: Cytoplasmic mass**
Cd	**: Cytoplasmic debris**
CF	**: Centric fusion**
D	**: Delation**
Ex	**: Exfoliation**
F	**: Fragment**
FA	**: Folic acid**
Folbp1	**: Folate binding protein 1**
G	**: Giant cell**
H	**: Haemorrhage**
h	**: Hypoplasia**
Hb	**: Haemoglobin**
HCT	**: Haematocrit**
K	**: Karyorhexis**
Ky	**: Karyolysis**
L	**: Leydig cells**
MA	**: Maturation arrest**
MCH	**: Mean corpuscular haemoglobin**
MCHC	**: Mean corpuscular haemoglobin content**
MCV	**: Mean corpuscular volume**
MFD	**: Moderately folate-deficient**
MS	**: Molecular size**
MTX	**: Methotrexate**

MZ : Molecular size
NTC : Non-transgenic controls
O : Oedema
Po : Polyploidy
P : Pyknosis
Ps : Primary spermatocytes
R : Ring form
RBCs : Red blood cells
Rf : Relative front
S : Space
Sc : Sertoli cell
Sd : Spermatids
SFD : Severely folate-deficient
Sg : Spermatogonia
SL : Sloughing
Ss : Secondary spermatocytes
ST : Seminiferous tubule
Sz : Spermatozoa
TBT : Tumour bearing transgenic
V : Vacuole
WL : Wide lumen
WS : Wide space

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