THE EFFECTS OF DIETARY ARTIFICIAL COLORS ON EXPERIMENTAL RATS

Submitted By

Fatma Kamal Abd El-Hamid Mohamed

B.Sc. of Science (Biochemistry), Faculty of Women, Ain Shams University, 2002

A thesis submitted in Partial Fulfillment

Of

The Requirement for the Master Degree

In

Environmental Sciences

Department of Environmental Basic Sciences

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APPROVAL SHEET

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This thesis Towards a Master Degree in Environmental Sciences Has been Approved

Name Signature

1-Prof. Dr. Hala Ibrahim Awad Allah

Prof. of Community Medicine & Environment, Head of Department of Environmental Medical Sciences

Institute of Environmental Studies & Research

Ain Shams University

2-Prof. Dr. Effat Abdo Ahmed Afifi

Prof. and Head of Unit Alone

National Institute of Nutrition

3-Prof. Dr. Mahmoud Ahmed Ibrahim Hewaihy

Prof. of Public Health, Department of Environmental Basic Sciences

Institute of Environmental Studies & Research

Ain Shams University

2018

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Under The Supervision of:

1-Prof. Dr. Mahmoud Ahmed Ibrahim Hewaihy

Prof. of Public Health, Department of Environmental Basic Sciences

Institute of Environmental Studies & Research

Ain Shams University

2-Prof. Dr. Azza Omar Lotfy

Prof. of Environmental Medical Sciences

National Institute of Nutrition

2018

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Fatma Kamal

Cairo, Egypt

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ADHD	Attention –deficit hyperactivity disorder
AFCs	Artificial food colors
ALP	Alkaline phosphatase
ALT	Alanine aminotransferase
AST	Aspartate aminotransferase
BWG	Body weight gain
°C	Callouses degree
EDTA	Ethylene Diamine Tetraacetic acid
FER	Feed Efficiency Ratio
FI	Food intake
GIT	Gastro intestinal tract
GOT	Glutamic Oxalacetic transeaminase
GPT	Glutamic pyruvic transaminase
HDL	High density lipoprotein
Hb	Hemoglobin
LDL	Low density lipoprotein
SD	Standard deviation
Sign.	Significance
SPSS	statistical package for social science
TG	Triglyceride
WHO	World Health organization

wt	Weight
ADI	Acceptable Daily Intake

The Effects of Dietary Artificial Colors on Experimental Rats

ABSTRACT

Recently the use of synthetic food coloring additives was increased and the levels of human exposure to such agents are very broad, thus feeding over long periods may continually possess potential hazards to the human health. Evaluation of the toxic effects of synthetic dyes brilliant blue, Tartrazine and Carmoisine were tested in rats by measuring their actions on renal, hepatic function, lipid profile, blood glucose, body-weight gain and hemoglobin concentration. Rats were fed synthetic dyes supplemented diet , daily for 60 and 90 days orally in two doses, one low and the other high dose followed by serum and tissue sample collection for determination of ALT, AST, ALP, urea, creatinine, uric acid , lipid profile, fasting blood glucose in serum and estimation of hemoglobin concentration. Our data showed a significant increase in ALT, AST, ALP, in addition to serum urea and creatinine levels in treated rats, While, they recorded a significant decrease in percentage of body weight change,HB concentration. Histopathological examinations revealed alterations in kidneys include: congestion and proteinaceous material in the lumen of renal tubules and perivascular oedema. Whereas alterations in liver include: focal necrosis of hepatocytes, vacuolation and. hydropic degeneration of hepatocytes and congestion of hepatic sinusoids. **Conclusion**: We concluded that Tartrazine, Carmoisine and brilliant blue affect adversely and alter biochemical markers in vital organs e.g. liver and kidney not only at higher doses but also at low doses

Keywords: Food coloring additives, brilliant blue, Tartrazine, Carmoisine, Histopathologic.