

EVALUATION OF SOME FOOD COMPONENTS AS ANTICARCINOGENIC PROTECTORS

By

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B.Sc. Agric. Sci. (Home Economics), Fac. Agric., Cairo Univ., 1999

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APPROVAL SHEET

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ABSTRACT

The present investigation aimed to evaluate some components in some dried fruits and vegetables and its protective effect against acrylamide as cancer promoting substance. Chemical composition, antioxidant activities, phenol and lycopene contents of the examined materials were determined. The study also concerned with the protective effect on some blood indices and histopathological sections of liver, brain, prostate and small intestines in male albino mice. The biological evaluation consisted of two experiments. Each experiment included 49 adult male Swiss albino mice (25 ± 2 g). The experimental mice were divided to seven groups, each seven mice. The first group was considered as negative control. The other remaining mice were subjected for daily oral administration of acryl amide ($50 \mu\text{g/kg}$ body weight for 4weeks in the first experiment and $40 \mu\text{g/kg}$ body weight for 8weeks in the second experiment). These groups were given diets with the different formulas. One of them (second group) was considered as positive control. Both negative and positive groups were fed on basal diet. The other five groups were given diets with 20% of different dried fruits and vegetables. Groups 3, 4, 5, 6 and 7 were assigned for formulas with raisins, apricot, figs, tomato and carrot, respectively. At the end of the first experiment, the relative organs' weights including liver, Kidney, spleen, small intestine and heart were assessed. Liver and small intestines were histopathologically examined. At the end of the second experiment, the relative organs' weights including liver, Kidney, spleen and brain were also recorded. Liver, brain, prostate and small intestines were histopathologically examined. Chromosomal study on the protective role of dried figs against acrylamide effect on bone marrow cells of mice and incidence of chromosomal aberrations.

The chemical analysis demonstrated that 100g of the used materials contained 14.5 - 3.71% protein, 1.13 - 0.49% lipids, 10.01 - 1.86% ashes, 73.88 - 58.1% carbohydrates, 348.65 - 252.77 Kcal. Tomatoes showed the highest values of antioxidants activity, phenols and lycopene contents. The biological experiment showed insignificant differences among feed intakes, initial, final & gain% of body weight, feed efficiency ratios and relative organs' weights. Serum lipids AST, ALT uric acid, urea nitrogen and creatinine of all the groups were within the normal range. The histopathological examination of organs' sections in first experiment showed clear effects associated with the consumption of vegetables and fruits on the histopathological sections. In the second experiment, it demonstrated very severe or severe effects on positive control). In the other groups, several changes, i.e. moderate, mild and normal histopathological structures were detected in different organs of the treated groups.

These findings suggested that the high consumption of dried fruit and vegetables might be associated with a reduced risk of different types of cancer.

Key words: cancer, dried fruits, tomato, carrots, antioxidant activity, mice, acrylamide, histopathological examination, carotenoids, lycopene and phenols.

DEDICATION

I dedicate this work to whom my heartfelt thanks; to my husband Dr.Samir and my kids Yaman, Nouredin and Abdel Rahman for their patience and help, as well as my family specially my father and mother for all the support they lovely offered along the period of my post graduation.

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CONTENTS

INTRODUCTION.....	1
REVIEW OF LITERATURE.....	5
1. The relation of vegetables and fruits consumption with cancer protection	5
a. Tomatoes	10
b. Carrots.....	11
c. Dried figs, apricots and raisins.....	12
2. Natural promoters of Cancer.....	15
a. Acrylamide	15
b. Free radicals.....	17
3. Nutrients related to cancer suppressors.....	18
a. Polyphenols.....	18
b. Lycopene.....	21
c. Beta Carotene.....	23
d. Some Vitamins and Minerals	25
e. Fiber.....	28
4. Antioxidants and cancer.....	29
a. Antioxidants Activity.....	29
b. Antioxidants Enzymes.....	33
5. Genetic related to cancer.....	34
MATERIALS AND METHODS.....	36
RESULTS AND DISCUSSION.....	48
1. Proximate analysis of dried fruits and vegetables.....	48
2. Antioxidant activity of different materials.....	50
3. Total phenolic content of different materials.....	52
4. Lycopene content of different materials	53
5. The biological experiments	54
a. The first experiment.....	54
1. Feed intake and body weight gain.....	54
2. Organs weight and relative organs weight	56
3. Lipid profile	56
4. Liver functions	59
5. Kidney functions	59
6. The histopathological examination.....	60
b. The second experiment	69
1. Feed intake and body weight.....	69

2. Organs weight and Relative organs' weight.....	71
3. Lipid profile.....	71
4. Liver functions	75
5. Kidney functions.....	76
6. Histopathological examination.....	77
6. Chromosomal study on the protective role of some dried fruits against acrylamide effect on bone marrow cells of mice.....	109
SUMMARY.....	114
REFERENCES.....	118
ARABIC SUMMARY.....	

LIST OF TABLES

No.	Title	Page
1.	Composition of basal diet (AIN-93M diet).....	41
2.	Composition of 1 Kg vitamin mixture.....	41
3.	Composition of 1Kg salt mixture	42
4.	Groups of animals.....	43
5.	Composition of experimental diets	45
6.	Proximate analysis of the raw materials	49
7.	Antioxidant activity of different materials by β - Carotene bleaching assay	50
8.	Antioxidant activity of different materials by DPPH scavenging assay.....	50
9.	Antioxidant activity of different materials by reducing power method.....	51
10.	Total phenolic content of different materials as gallic acid	52
11.	Lycopene content of different materials	53
12.	Initial body weights, final body weights and feed intake in mice of the experimental groups after 4 wk.	55
13.	The organs' weights (g) in mice of the different experimental groups (after 4 weeks).	57
14.	The relative organs' weights of the experimental mice at the end of experiment (after 4 weeks)	57
15.	Lipid profile in mice of the different experimental mice after 4wk.....	58
16.	AST and ALT activities in mice of the different experimental mice after 4wk.....	59
17.	Uric acid, urea nitrogen and creatinine in mice of the different experimental groups after 4wk.....	60
18.	Initial body weights, final body weights and feed intake in mice of the experimental groups after 8wk.....	69
19.	The organs' weights (g) in mice of the different experimental groups after 8wk.	73
20.	The relative organs' weights in mice of the different experimental after 8wk.....	73
21.	Lipid profile in mice of the different experimental mice after 8wk.	74

22.	AST and ALT activities in mice of the different experimental mice after 8wk.....	75
23.	Urea nitrogen and creatinine in mice of the different Experimental groups after 8wk.....	76
24.	The severity of the reaction indifferent organs according to histopathological alterations	105
25.	Mean percentage and chi-square values in bone marrow cells of treated mice with or without figs.	110

LIST OF FIGUERS

No.	Title	Page
1.	Body weight gains (%) in mice of the different experimental groups.....	55
2.	Liver of mice from group 1 showing the normal histological structure of hepatic lobule.....	60
3.	Liver of mice from group 2 showing kupffer cells activation, of hepatic sinusoids associated with leucocytosis	61
4.	Liver of mice from group 3 showing karyomegaly of some hepatocytic nuclei.....	61
5.	Liver of mice from group 4 showing apparent normal hepatocytes.....	62
6.	Liver of mice from group 5 showing hepatitis. Noticmassive inflammatory cells infiltration associated with necrosis of hepatocytes	62
7.	Liver of mice from group 6 showing massive leukocytes inflammatory cells infiltration as well as vacuolated hepatocytes.....	63
8.	Liver of mice from group 7 showing sinusoidal leukocytosis	63
9.	Small intestine of mice from group 1 showing the normal histology of intestine layers. Mucosa, submucosa and musciosa	64
10.	Small intestine of mice from group 2 showing the necrosis of intestine villi associated with odema and leukocytes cells infiltration.....	64
11.	Small intestine of mice from group 3 showing apparent normal intestine villi mucosa.....	65
12.	Small intestine of mice from group 4 showing apparent normal intestine with odema and leukocytes cells infiltration in lamina propria.....	65
13.	Small intestine of mice from group 5 showing slight odema and leukocytes cells infiltration in lamina propria.....	66
14.	Small intestine of mice from group 6 showing apparent normal intestine with slight odema and leucocytes infiltration in lamina propria.....	66
15.	Small intestine of mice from group 7 showing odema and inflammatory cells infiltration in lamina propria.....	67

16.	Body weight gains (%) in mice of the different experimental groups.....	70
17.	Liver of mice in group 1 showing normal histopathological structure of the central vein (cv) and surrounding hepatocytes (h).....	77
18.	Brain of mice in group 1 showing normal histopathological structure of the meninges (m), cerebral cortex (cc), and cerebral striatum (cs).....	78
19.	Brain of mice in group1 showing intact histopathological structure of the hippocampus (hp)	78
20.	Brain of mice in group 1 showing normal histopathological structure of the cerebellum (cr).....	79
21.	Small intestine of mice in group 1 showing normal histopathological structure of the mucosal (m), lamina propria (lp) and muscularis (ml).....	79
22.	Prostate gland of mice in group 1 showing normal histopathological structure.....	80
23.	Liver of mice in group 2 showing focal inflammatory cells aggregation (m) in the degenerated necrosed hepatocytes (n)	81
24.	Liver of mice in group 2 showing magnification of (Fig. 23) to identify the focal inflammatory cells aggregation (m) in the degenerated necros ed hepatocytes (n)	81
25.	Liver of mice in group 2 showing diffuse inflammatory cells infiltration (m) in between the degenerated hepatocytes (n)	82
26.	Liver of mice in group 2 showing inflammatory cells infiltration (m) surrounding the central vein (cv).....	82
27.	Liver of mice in group 2 showing karyocytomegaly (km) in the hepatocytes	83
28.	Liver of mice in group 2 showing kupffer cells proliferation (arrow) in between necrosed (n) and karyocytomegaly (km) hepatocytes	83
29.	Brain of mice in group 2 showing focal (fg) as well as diffuse (dg) gliosis in the cerebrum	84
30.	Brain of mice in group 2 showing perivascular cuffing surrounding the blood vessels (arrow) and medullas oblongata.....	84
31.	Brain of mice in group 2 showing magnification of (Fig. 30) to identify the perivascular cuffing surrounding the blood vessels (arrow) in medullas oblongata.....	85

32. Small intestine of mice in group 2 showing normal focal inflammatory cells infiltration (m) in lamina propria with odema and hypertrophy in the muscularis (ml).....	85
33. Small intestine of mice in group 2 showing magnification of (Fig. 32) to identify the focal inflammatory cells infiltration (m) in lamina propria with odema and hypertrophy in the muscularis.....	86
34. Small intestine of mice in group 2 showing lymphoid hyperplasia.....	86
35. Prostate gland of mice in group 2 showing atrophy of epithelial lining.....	87
36. Prostate gland of mice in group 2 showing necrosis and fibrosis of epithelium.....	87
37. Prostate gland of mice in group 2 showing interstitial odema and desquamated epithelium in the lumen.....	88
38. Liver of mice in group 3 showing Fatty change in the hepatocytes (arrow) surrounding the dilated central veins (cv).....	88
39. Liver of mice in group 3 showing Fatty change in the hepatocytes (arrow) surrounding the portal area with dilatation in portal veins (pv).....	89
40. Liver of mice in group 3 showing magnification of (Fig. 39) to identify Fatty changed hepatocytes (arrow).....	89
41. Brain of mice in group 3 showing odema in the hippocampus (o).....	90
42. Small intestine of mice in group 3 showing intact histopathological structure.....	90
43. Prostate gland of mice in group 3 showing normal histopathological structure.....	91
44. Liver of mice in group 4 showing normal histopathological structure of the central vein (cv) and surrounding hepatocytes (h).....	91
45. Brain of mice in group 4 showing odema in the hippocampus (o).....	92
46. Small intestine of mice in group 4 showing few inflammatory cells infiltration with odema (m) in the lamina propria.....	92
47. Small intestine of mice in group 4 showing lymphoid depletion (p).....	93

48.	Prostate gland of mice in group 3 showing normal histopathological structure.....	93
49.	Liver of mice in group 5 showing Diffuse kupffer cells proliferation (arrow) and diffuse inflammatory cells infiltration (m) in between the karyocytomegalic (km) hepatocytes.....	94
50.	Brain of mice in group 5 showing odema (o) in the hippocampus (hp).....	94
51.	Small intestine of mice in group 5 showing diffuse inflammatory cells infiltration (m) lamina propria.....	95
52.	Small intestine of mice in group 5 showing lymphoid hyperplastic in Submucosa.....	95
53.	Prostate gland of mice in group 5 showing interstitial leucocytic cells infiltration.....	96
54.	Prostate gland of mice in group 5 showing hyperplasia of epithelial lining.....	96
55.	Liver of mice in group 6 showing inflammatory cells infiltration (m) surrounding the central vein (cv) with degeneration in the hepatocytes.....	97
56.	Liver of mice in group 6 showing cytomegalic hepatocytes(km).....	97
57.	Brain of mice in group 6 showing intact normal histopathological structure in the meniunges (m), cerebral cortex (cc) and cerebral striatum (s).....	98
58.	Small intestine of mice in group 6 showing inflammatory cells infiltration in lamina propria of the villi (m) with hypertrophy and odema and muscularis (ml).....	99
59.	Small intestine of mice in group 6 showing magnification of (Fig. 58) to identify the inflammatory cells infiltration in lamina propria of the villi (m) with hypertrophy and odema in the muscularis (ml).....	99
60.	Small intestine of mice in group 6 showing lymphoid hyperplasia in the submucosal layer (p).....	100
61.	Prostate gland of mice in group 6 showing atrophy of epithelial lining and thickening of muscular layer.....	100
62.	Prostate gland of mice in group 6 showing slight intreaciner odema.....	101
63.	Liver of mice in group 7 showing ballooning degeneration in the hepatocytes(d).....	101

64.	Brain of mice in group 7 showing intact normal histopathological structure in the meninges (m), cerebral cortex (cc) and cerebral striatum (s).....	102
65.	Brain of mice in group 7 showing intact normal histopathological structure in the hippocampus (hp).....	102
66.	Small intestine of mice in group 7 showing lymphoid hyperplasia in the submucosal layer (p).....	103
67.	Prostate gland of mice in group 7 showing desquamation of epithelial cells with formation of corpora amylacea in the lumen.....	104
68.	Prostate gland of mice in group 7 showing interaciner odema.....	104
69.	Prostate gland of mice in group 7 showing marked distension of the acini with colloid protein.....	105
70.	Metaphase spread of mouse bone marrow cells treated with acrylamide showing chromatid break (arrow).....	111
71.	Metaphase spread showing deletion (large arrow) and fragment (small arrow).....	111
72.	Normal metaphase spread of mouse bone marrow cells.....	112