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 µg/kg body weight for 4weeks in the first experiment and 40 µg/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, Nourein 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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