Biochemical studies on the addition of some natural products on lipid profile in rats exposed to gamma ray

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5- The present study was conducted to evaluate the influence of adding the extracts of some natural products (parsely, remary,green tea and curcumin)on the lipid profile in rats before and after exposure to gamma irradiation. A total of 126 albino rats weighting about 160-170 gm were used. Male of albino rats were provided from the rat's farm at Nuclear Research Center, Atomic Energy Authority and animated for 10 days in the animal house under normal conditions and fed on a basal diet. Albino rats in 7 major groups {contained 14 sub groups (n=9)} groups were administered basal diet only or basal diets in addition to one of the following treatments: alpha-tochopherol, rosemary, parsley, green tea and curcumin extract (150 and 300 mg/Kg b.w.). All the mentioned treatments were orally administered twice a week for 30 day before irradiation treatment, and also for 15 days after irradiation. Blood samples were collected and subjected to different preparation for biochemical analysis and histological examination. 5.1. Phenolic and flavonoid constituent of the natural extracts:? The order of percentage of total phenolic compound was as follows: green tea rosemary curcumin parsleyAccording to the aforementioned data concerning the HPLC analysis for the natural extracts of parsley, rosemary, green tea and curcumin, the observed results revealed the presence of many biologically active components including phenols and flavonoids, which had different antioxidants activities5.2. Influence of the tested natural extracts on hematological parameters of rats:The influence of the tested natural extracts from parsley, rosemary, green tea and curcumin on the hematological parameters included blood hemoglobin levels, red blood cells counts (RBCs), total count of blood leucocytes (white blood cells, WBCs.) and platelet level (PLT) of albino rats before and after whole body exposure to 5Gy gamma radiation were evaluated. The observed results showed that utilization of the tested natural extracts in the administration of albino rats exerted a noticeable function in amelioration all the studied hematological parameters and attenuating the radiation induced changes in most of the studied parameters. In another words, albino rats received supplementary the tested natural extracts, showed significantly less severe damage and remarkable improvement in all of the measured hematological parameter when compared to untreated rats.? from the obtained results It could be concluded that orally administration of the tested natural extracts from parsley, rosemary, green-tea and curcumin has significantly ameliorated and/or attenuated the radiation-induced disturbances in the studied hematological parameters in the blood of albino rats.5.3. Influence of the tested natural extracts on liver and kidney function of rats:5.3.1. Liver function.The obtained data revealed that the level of serum aspartate transaminase (AST) and alanine transaminase (ALT) were highly significant increased in response to whole body exposure to 5Gy gamma radiation, since serum (AST) and (ALT) were increased compared with non-irradiated rats. Also these results revealed a noticeable radioprotective property for the tested natural extracts from parsley, rosemary, green-tea and crucumin in addition to alpha-tocopherol against the oxidative damage and the hazards changes included by gamma irradiation. Such radioprotective property of the tested natural extracts possessed amelioration for the rats liver and attenuated the harmful oxidative damage for liver.5.3.2. Kidney function:br? The obtained results showed that, orally administration of the tested natural extracts and alpha tocopherol exerted protective property

against the changes induced by gamma radiation compared with the positive control, ethanol control, oil control and also with the unirradiated control.The beneficial role of the tested natural extracts from parsley, rosemary, green tea and curcumin may be attributed to their natural phytochemical constituents, and their antioxidant property and ability to scavenge free radicals and reactive oxygen species. Consequently protected albino rats, attenuated and/or minimized the damaging effects of different free radicals.5.4. Serum total antioxidant capacity and catalase enzyme:-? The obtained results indicated that, orally administration of the tested natural extracts increased significantly the total antioxidant capacity of blood in albino rats after 30 days (post administration) in comparison with untreated rats in different controls treatments.The observed data showed that, orally administration of the tested natural extracts increased serum catalase significantly after 15 days post-irradiation? Also, the tested natural extracts from parsley, rosemary, green tea and curcumin exerted a beneficial role in protecting the level of serum catalase enzyme in irradiated albino rats due to amelioration of catalase level in serum and attenuating gamma irradiation oxidative damage for liver and the harmful hazard change induced by radiation.5.5. Influence of the tested natural extracts on serum lipid profile of rats:The obtained data revealed noticeable increase in total lipid level in the blood of albino rats administrated the tested natural extract over 30 days before irradiation.The data revealed a noticeable radioprotective effect of all tested natural extracts, due to their efficiency in protecting albino rats against the hazards and oxidative damage of gamma radiation, and attenuating the harmful changes in total lipid level. ?The obtained results showed a clear increase in the serum triglycerides level in the blood of all treated and untreated rats after 30 days post-administration with or without the tested natural extracts, since changes were in close range in the values of serum triglycerides level in treated and untreated rats at 30 days post-administration, since the changes were nearly approached similar response.The total triglycerides level values indicated a highly significant decrease in serum triglycerides in the blood of rats supplemented orally the tested natural extract or alpha tocopherol over 15 days post irradiation compared to corresponding irradiated control (positive control).The results showed that after orally administration of the tested natural extracts over 30 days before irradiation there was slight increase in total serum cholesterol in treated and untreated albino rats after 30 days post-administration?However Total serum cholesterol level in the blood of rats was highly significant decrease with supplemented orally the tested natural extract or alpha tocopherol over 15 days post irradiation compared to the corresponding irradiated control (positive control).?The obtained data showed noticeable increase in serum LDL-cholesterol level in the blood of all irradiated albino rats compared to unirradiated rats.On the other hand, the results indicated considerable decrease in serum LDL-cholesterol level in the blood of rats supplemented orally the tested natural extracts or alpha-tocopherol over 15 days post-irradiation compared to the corresponding irradiated control (positive control).The observed results showed slight increase in serum HDL-cholesterol level in the blood of administrated and unadministrated albino rats after 30 days post- administration, and the increase in serum HDL-cholesterol level was in close range in both treated and untreated albino rats, which nearly approached similar response.The obtained results revealed a noticeable decrease in serum HDL-cholesterol level in the blood of all irradiated albino rats compared to unirradiated rats.5.6. Influence of the tested natural extracts on the histopathological changes in albino rats:.According to the previo histopathological findings obsrved from the histolgical examination, it could be concluded that the natural extracts of parsley, rosemary, green tea and curcumin play a significant role in minimizing the tissue damages upon exposure to ionizing radiation via preventing the over production of different free radicals and reactive oxygen species in irradiated cells of irradiated albino rats.The histopathological results showed different distortion in the organs, tissue and cells of irradiated albino rats in the positive control. Also, the tested natural extracts exerted a radioprotective and curative role against radiation – induced damage in the ultrostructure configurations of liver, kidney, tests and brain cells.The observed histological results revealed that the tested natural extracts of curcumin, parsley and rosemary demonstrated high radioprotective effect nearly approached similar effects of alpha-tocopherol as standard natural antioxidant. On the other hand, curcumin extracts exerted the high radio-protective effect followed by parsley and rosemary, whereas green tea extracts showed weak radio-protective effect.Generally, it could be

recommended that the natural extracts fractionated from parsley, rosemary green tea and curcumin, could be used as orally administration in irradiated albino rats to possess radio-protective effect for the rats against all radiation effects in order to attenuating ameliorating and/or minimizing all the changes induced by radiation.Such protective effect of the tested natural extracts may be attributed to their natural phytochemicals constituent including the phenols and flavonoids contents, which revealed the presence of the biologically active phenols, polyphenol and flavonoids having strong antioxidant activities in the tested natural extracts.