Cytogenetical and histochemical studies of certain growth regulator on bone-mareow and kidney of albino rat.

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Gibberellic acid is one of a plant growth regulators group that have been identified in different plants and they are used in agriculture as plant regulators to stimulate both cell division and cell elongation that affect leaves as well as stems. Gibberellic acid (GA3) is used extensively in Egypt to increase the growth of some fruits (such as strawberries and grapes) and some vegetables (such as tomatoes, cabbages and cauliflowers).The present work searched for the study of the cytogenetic, histological and histochimical effects of GA3 , and this was achieved by using cytogenetic studies.The current study was divided into two main parts:Cytogenetics study; includes:Chromosomal aberrations assay and micronucleus test in bone marrow cells.Estimation of the frequency of abnormally-shaped sperm cells.Histological and histochemical studies.Thirty five mature male albino rats were used for the present work to study of the effect of 500mg/kg of gibberellic acid on chromosomal aberration. They were classified into two groups. The first one comprised five rats and kept as a control group. The Second groups comprised: thirty rats which were subdivided into six equal subgroups, 5 rats in each subgroup. Chromosomal preparations (metaphase chromosomes) were made from the femoral bone marrow cells after treatment with 500mg/Kg body weight of gibberellic acid -administrated by oro-gastric tube after the 1st, 2nd,3rd,4th,5th, and 7th weeks post treatment. At the same time bone marrow smears, spreads of cauda epididymis preparations were taken to study the frequency of micronucleus production and abnormally-shaped sperm cells. In additional tissue specimens of kidney were taken from the control and treated animals to study the effects of GA3 on the histological and histochemical pattern of the renal tissue.The results can be summarized as the following:Chromosomal aberration:GA3 treatment of rats induced a marked elevation in chromosomal aberration of bone marrow cells. The higher percentage of chromosomal aberrations after GA3 administration was noted after the first week post-treatment then, the percentage was decreased gradually by the time factor after GA3 administration but still higher than that of the control group.Mitotic index:GA3 reduced the mitotic index of bone marrow cells of treated rats. This value -undergoes a gradual recovery after 1st, 2nd, 3rd, 4th, 5th and 7th week post treatment.Micronucleus test:The oral administration of rats with GA3 increased the micronucleus production in bone marrow cells.The higher percentage of MNPCEs after GA3 administration was noted after the first week post-treatment then, the

percentage was decreased gradually by the time factor after GA3 administration but still higher than that of the control group.Bone marrow activity:The data obtained after the oral administration of rats with 1/3 LD50 of gibberellic acid illustrated that gibberellic acid (GA3) increased the bone marrow activity as compared with that of the control animals.Effect of GA3 on the sperm morphology:The data demonstrated that after oral administration of rats with 1/3 LD50 of gibberellic acid, the total number of deformed sperms was increased as compared with that of the control animals.Effect of GA3 on the histological structure of the kidney:Inspection of kidney of rats after treatment with GA3 had resulted in different histopathological lesions both in the renal corpuscles and the tubular elements. The renal epithelia of the proximal and distal convoluted tubules were ill defined and their nuclei appeared overlapping each other. The renal blood vessels appeared congested and dilated, some renal corpuscles appeared degenerated and shrunken with Pyknotic nuclei and the interstitial tissue suffered from severe haemorrhage. These histopathological changes were still existing and increased after first, second, third and fourth weeks post treatment with GA3 while after fifth and seventh weeks post treatmant the renal tissue restored part of the normal histological architecture of the kidney.Effect of GA3 on the protein content of the renal tissue:After GA3-treatment the histochemical localization of proteins inside the elements of the renal tissue recorded a detectable decrease. This decrease in the MBB positive material after the first, second, third and fourth weeks post treatment with GA3was still persisted, while after fifth and seventh weeks post treatment the tissue sections of kidney revealed a strongly positive MBB material which nearly similar to the normal picture exhibiting a some sort of recovery.