

Physiological studies on reproduction in rabbits

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The study was carried out on Faculty of Agriculture at Moshtohor rabbit farm and the laboratory work was done in Animal Production Research Institute, Agricultural Research Center, Ministry of Agriculture, Egypt. The Field work was carried out during the period from February till July 2002. The present study was planned to investigate the productive and reproductive performance traits of rabbits as toxic by copper oxychloride fungicide and more effecting on general healthy and effects on chromosomal aberrations. Using 45 New Zealand White (NZW) mature rabbit females. Their aging ranged between 5-6 months and weight average about 3 kg. Feed and water provided ad libitum for two weeks before experiment starting, after that were assigned to three groups experimental according to the following lethality copper oxychloride doses. 1st group (G1) = Basal feed (control). 2nd group (G2) = Feeding for mixture copper oxychloride (0.1184 gm Cu/Kg. BW/day) as 1/20 LD50. 3rd group (G3) = Feeding for mixture copper oxychloride (0.2368 gm Cu/Kg. BW/day) as 1/10 LD50. The results obtained in this study could be summarized as follows:

- 1-Feed intake: Daily feed consumption were recorded from the beginning experiment till slaughtering to obtained the samples, the result observed decreased of feed intake for 2nd by (18.05%) and 3rd groups by (42.4%) compared with control group respectively.
- 2-Clinical symptoms: Rabbits were under observation daily for evidence of clinical signs as general depression, loss of appetite. excessive thirst. soft feces. dark and brown urine and easily detached hair.
- 3-Hematological analysis: Hemoglobin (Hb) concentrations were 11.78, 9.33 and 8.12 gm/100 ml in the 1st, 2nd and 3rd groups respectively after 60 days. These results decreased significantly ($P < 0.05$). The means of PCV% were 39.16, 32.93 and 29.03 % for 1st, 2nd and 3rd groups. The results were decreased significantly ($P < 0.001$). The highest of mean value for RBCs was 5.96 millions/mm³ in the 1st group, while the lowest value was 2.96 millions/mm³ in the 3rd group after 60 days for treatment. The highest of mean value for WBCs was 7.81 thousand/mm³ in the 1st group, while the lowest value was 3.95 thousand/mm³ in the 3rd group after 60 days. These results were decreased significantly ($P < 0.001$), that due to the effect of treatment.
- 4-Biochemical analysis: For analysis enzymes AST and ALT to refer for liver functions, from obtained results, the highest mean value of AST was 69.47 U/l in the 3rd group, while the lowest value was 16.68 U/l in the 1st group. The highest mean value of ALT enzyme was 84.99 U/l in the 3rd group, while the lowest of value was 16.48 U/l. The obtained results were increased significantly ($P < 0.001$) in liver enzymes, that due to the effect of treatment. Creatinine concentrations in serum were increased significantly ($P < 0.001$) between groups at different exposed periods. But urea concentrations in serum were not significantly differences among groups. For determination copper element residues. the highest mean values were 376.69 in serum, 73.70 in liver, 50.53 in kidney, 9.80 in muscle 271.10 in feces and 1.17 in urine in the 3rd group. These results were increased significant ($P < 0.001$) among group after 60 days of experiment. In this cases the liver and kidney must be removal from rabbit carcass.
- 5-Histopathological changes: Liver was observed hydropic degeneration of hepatocytes in 2nd group after 40 days from beginning experiment, while in the 3rd group after 40 days, showing extensive hydropic degeneration of hepatocytes and congestion of central veins. Kidney samples histopathological examined, showing cloudy swelling of the lining epithelium of renal convoluted tubules for both treated groups compared with control group. In both treated groups (2nd and 3rd) the ovaries examined, showing degeneration and atresia of some ovarian follicles. In each of treated groups, uterine horn examined and showing congestion of the uterine blood vessels (2nd group)

and hyperplasia of the lining epithelium of endometrium (3rd group). 6-Reproductive and productive performance: Ovary weight, oviduct length and number of corpora lutea were not significantly different between groups. But number of embryos per horn was decreased significantly ($P < 0.05$) in treated groups. The mean values of number for implantation sites per female were 8.33, 7.50 and 6.80 in the 1st, 2nd, and 3rd group respectively, these results decreased significantly ($P < 0.05$) between groups. The percentage of post-implantation loss were 3.92, 9.96 and 29.68 % in the 1st, 2nd and 3rd groups respectively, these results were increased significantly ($P < 0.05$). The obtained results due to the effect of copperoxychloride fungicide overload and advanced exposed rabbits. The means of litter size at birth were 7.25, 5.75 and 5.25 in the 1st, 2nd and 3rd group respectively, these results decreased significantly ($P < 0.05$) after 60 days. Also, the mean values for litter size at weaning (28 days) were 6.25, 4.00 and 2.75 in the 1st, 2nd and 3rd groups respectively, that results decreased significantly ($P < 0.001$). The obtained results due to the effect of treatment throughout lactation periods. The means of litter weight at birth and weaning were decreased significantly ($P < 0.001$) in the treated groups. The percentages of pre-weaning mortality were 13.8%, 30.4% and 47.6% in the 1st, 2nd and 3rd groups respectively. From the results, the highest of mean value was in the 3rd group that due to the effect of treatment, lead to poisoning of the offspring rabbits.

7-Cytogenetic study: In the present study the results indicated that effect of copper oxychloride fungicide on the structural aberration chromosome in rabbits were increased significantly ($P < 0.01$) in both treated groups compared with control group. Gaps, deletions, and sticky structure aberrations were significantly ($P < 0.001$) in both treated groups, while centromeric attenuations and ring structures were significantly ($P < 0.01$).