Response of Newzealand Rabbits to Drinking Water Treated with PolyDADMAC

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Abstract : This work has been managed to yield toxicity information on water treatment agents in the Sudan namely polyDADMAC, using New Zealand rabbits at multiple daily oral doses for a period of 10 weeks. Thirty-three heads of New Zealand rabbits were divided into 11 groups, each of three. Group 1 animals were the undosed controls. Test groups of either species were given polyDADMAC at similar dose rates of 0.5, 2.5, 4.5, 10, 15, 20, 25, 50, 100 and 150 mg/kg body weight respectively for groups 2,3,4,5,6,7,8,9,10 and 11. Clinical signs were closely observed with postmortem and histopathological examinations. Chemical investigations included enzymatic concentrations of ALP, GOT, CK, GPT and LDH together with hematological changes in Hb, PCV, RBCs and WBCs. Mortalities occurred to variable degrees irrespective of the dose level. On polyDADMAC challenge, the test species showed clinical signs of dullness, loss of weight, anorexia, diarrhea, difficulty in respiration, hind limb paralysis and recumbency. Notably oral dosing with polyDADMAC caused lung emphysema, hepatic and renal dysfunctions, irregularity in enzymatic activities and serum metabolites, sloughing of intestinal epithelium, decreased electrolytes in serum, and splenic haemosiderosis. On evaluation of the above results, polyDADMAC was considered toxic to New Zealand rabbits at all dose rates tried. Practical implications of the results were highlighted and suggestions for future work were put forward.

Keywords : polydiallyldiethylaluminiumchloride (polyDADMAC), nubian goats, toxicity of drinking water, treatment of drinking water using chemicals
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