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Pharmacological properties of Tulathromycin on mature male albino rats

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In the search for a novel antibiotic offering high efficacy against Bovine Respiratory Disease (BRD) and Swine Respiratory Disease (SRD) from a single administration, scientists screened hundreds of novel analogs based on literature macrolide templates for desired characteristics of spectrum, potency, and an indication of pharmacokinetic behavior that would support fast onset and extended duration of activity *in vivo*. During the course of the research programs, a novel class of macrolide, subsequently termed triamilides, was discovered with strong activity against gram-negative respiratory pathogens and desirable pharmacokinetic behavior, characterized by high and extended tissue levels in host animals. Tulathromycin is a novel macrolide antimicrobial with a triamilide structure found to be effective against bacterial respiratory pathogens in cattle and swine. The present study was carried out to evaluate the adverse effects of tulathromycin at different periods on reproductive system, hematological parameters, biochemical analysis and histological changes in liver, kidney, spleen and heart in male albino rats. Fifty rats were used in the present study for two experiments. In the first experiment, rats were randomly divided into two equal groups each of 15 animals. The first group received single subcutaneous injection of tulathromycin at a dose level of 10 mg/kg B.wt. The second group used as a control and injected subcutaneously with physiological saline solution at a dose of 2 ml/kg B.wt. In the second experiment, rats were randomly divided into two equal groups each of 10 animals. The first group received subcutaneous injection of tulathromycin at a dose level of 10 mg/kg B.wt. repeated once every week for eight successive weeks. The second group used as a control and injected subcutaneously with physiological saline solution at a dose of 2 ml/kg B.wt. by the same manner. The obtained results showed that single and repeated s.c administration of tulathromycin at a dose level 10 mg/kg B.wt. in mature male rats produced significant reduction in reproductive organs' weights in addition to increase in sperm counts, motility and abnormalities throughout periods of experiments. There was a significant decrease in WBCs count throughout periods of the second experiment as compared with control group. Rats treated with single and repeated tulathromycin showed significant increase in serum ALT, AST ALP, urea and creatinine levels all over periods of the experiments. It could be concluded that both single and repeated subcutaneous administration of tulathromycin at a dose level 10 mg/kg B.wt. in male albino rats induced several adverse effects. These effects were represented by certain fertility troubles which were noticed as reduction of some reproductive organs weights, changes in semen characters, biochemical disturbances in addition to some histological alterations in liver, kidneys, spleen and heart. Moreover, repeated subcutaneous administration of tulathromycin produced zinker's necrosis in the heart at 2nd week from last drug administration.