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Histopathological study on the effect of saffron extract in prevention of Cefazolin-induced nephrotoxicity in rat

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Cefazolin is the first-generation of cephalosporins which used against gram-positive and some gram-negative bacteria. Cefazolin-induced nephrotoxicity includes damage to tubules, lipid peroxidation and effect on the mitochondrial cellular respiration. Saffron is one of the food additives with pharmaceutic effects. In this research, we attempted to study the role of saffron extract in prevention of cefazolin-induced nephrotoxicity. 56 male rats were divided randomly into 8 equal groups and injected as follow: Group 1: Normal saline (IP) Group 2: Cefazolin 1200 mg/kg (IP) Group 3: Saffron extract 5 mg/kg (IP) Group 4: Saffron extract 40 mg/kg (IP) . Group 5: Saffron extract 80 mg/kg (IP). Group 6: Cefazolin 1200 mg/kg (IP) and saffron extract 5 mg/kg (IP). Group 7: Cefazolin 1200 mg/kg (IP) and saffron extract 40 mg/kg (IP). Group 8: Cefazolin 1200 mg/kg (IP) and saffron extract 80 mg/kg (IP). All injections were done as single dose. Histopathological examination revealed cell swelling, glomerular atrophy and apoptosis in group 2, normal tissue structure in group 3, hyperemia in group 4, glomerular necrosis, cellular cast and apoptosis in group 5, mild hyperemia in group 6, hyperemia and hyaline cast in group 7 and cellular cast, glomerular necrosis and apoptosis in group 8. The results of this study showed that co-treatment of cefazolin and saffron extract can prevent the nephrotoxic effect of cefazolin. Also, since in the group 3 there was not any lesions it seems that, this dose is the choice.

Keywords: saffron extract, cefazolin, nephrotoxicity, prevention

Microbial resistance of broiler poultry samples to the commonly used antibiotics in Kerman

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Microbial resistance to the commonly-used antibiotics is increasing due to inappropriate use. This study was performed to evaluate the microbial sensitivity and resistance to commonly-used antibiotics in 200 broiler poultry samples in veterinary laboratory center in Kerman. *Escherichia coli* (*E. coli*) (96%), was the most microbial agent isolated from broiler poultry samples, followed by *Salmonella* (2.5%) and *Staphylococcus* (1.5%). The result of antibiograms showed that Linco-Spectin and Florfenicol were the most effective antibiotics against *E. coli*, but all strains of *E. coli* (100%) were resistant to Tylosin. Also the microbial resistance of *E. coli* to other antibiotics was as follow: Enrofloxacin (65.6%), Difloxacin (78.6%), Neomycin (79.1%), Flumequine (79.6%), Sultrim (80.7%). *Salmonella* strains were completely sensitive to Florfenicol, Linco-Spectin and Enrofloxacin, while all *Salmonella* strains were completely resistant to Tylosin. *Salmonella* strains showed resistance to Oxy tetracycline (60%), Sultrim (40%), Neomycin (40%) and Difloxacin (40%). *Staphylococcus* strains were completely sensitive to Florfenicol and Linco-Spectin, while all *Staphylococcus* strains were resistant to Tylosin, Oxytetracycline and Neomycin. In summary, the results of this study showed that *E. coli* was the most frequent causative agent for infections in broiler poultry and Linco-Spectin and Florfenicol were the most effective antibiotics against *E. coli* strains and the microbial resistance to other commonly-used antibiotics was relatively high. So proper use of antibiotics is necessary for the treatment of poultry bacterial infections and the choice of antibiotics should be based on antibiogram results to prevent the wide spread resistance to commonly-used antibiotics.

Keywords: Microbial resistance, Antibiotics, Broiler poultry