

TITLE: ACUTE TOXICITY OF SOLUBLE POLYPYRROLE: A NON-CLINICAL STUDY FOR ITS APPLICATION IN THE TREATMENT OF INFECTIOUS MASTITIS IN BOVINE

AUTHORS: ALVES, A.P.P¹.; COSTA, M.M. ¹; PEIXOTO, R.M²; OLIVEIRA, H.P¹.; SILVA JÚNIOR, F.A.G¹.; SILVA, M.G.¹; RODRIGUES, J.P.S.¹

INSTITUTION: ¹UNIVERSIDADE FEDERAL DO VALE DO SÃO FRANCISCO, PETROLINA, PE (BR-407, KM 12 LOTE 543, S/N - PSNC, CEP 56300-000, PETROLINA – PE, BRASIL) ² IF SERTÃO-PE, CAMPUS PETROLINA PE 647, KM 22, PSNC N-4, ZONA RURAL, CX. 277, CEP56302-970, PETROLINA-PE

ABSTRACT:

Brazil ranks 3rd in milking cow herds worldwide. Despite this, the milk from some Brazilian creations still presents poor microbiological quality, mastitis is the most important disease responsible for this scenario. Antimicrobial therapy is the main tool for the treatment of bovine mastitis, although antimicrobial resistance has compromised the therapeutic approach. Based on this, the use of soluble polypyrrole is presented as an alternative treatment for infectious mastitis in cattle. Polypyrrole (Ppy) is a conductive polymer that has already been investigated for numerous biomedical applications, such as a promising antimicrobial activities, but there are no reports of toxicological studies of soluble polypyrrole. A single dose (acute) toxicity test was performed to assess the toxicity produced by soluble polypyrrole intraperitoneally injected to mice (*Mus musculus*) for a period not exceeding 24 hours, followed by animal observation for 14 days. Three experimental groups were used: Ppy Group 1000 mg/kg; Ppy Group 500 mg/kg and Control Group Physiological Solution. Each group consisted of 05 males and 05 females, totaling 30 animals. The following parameters were evaluated: presence of death; signs of toxicity (behavioral screening); body weight; feed and water consumption; and relative organs weight. Statistical analysis was performed using the Shapiro-Wilk test. We also performed a paired analysis using the repeated measures method, followed by the Bonferroni test. ANOVA was used to evaluate the results obtained between the analyzed groups, also followed by the Bonferroni Test. During the study, no deaths and clinical signs of toxicity were identified in all groups observed. In the control parameter of weight, when comparing mean weight among groups, significant differences were not observed (Control Group Physiological Solution, mean = 36.1g, SD = 3.7, Group Ppy 1000 mg/kg, mean 35.5g, DP = 4.97, Ppy Group 500 mg/kg, mean 36.6g, SD = 5.56). When analyzing water and feed intake, there was no significant difference over the 14 days for the 03 groups studied. For the relative weight of the organs, no differences were also found within and between the analyzed groups. Thus, soluble polypyrrole showed no toxicity at single application at the maximum dose of 1000 mg/kg.

KEYWORDS: ACUTE TOXICITY, POLYPYRROLE, MASTITIS, BOVINE.