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A novel non-toxic oxidovanadium(4+) complex as a potential DM2 treatment

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The interest in using vanadium(4+) compounds with anti-hyperglycemic action is growing since the evidence of the decrease in glycemic levels with the use of oxidovanadium(4+) sulfate[1]. Vanadium compounds were used in tests of clinical phases 1 and 2, presenting severe side effects, due to the high nephrotoxicity of these compounds [2,3]. A novel therapeutic prototype of a non-toxic vanadium compound was synthesized and acute oral toxicity tests were realized. The oxidovanadium compound was characterized by spectroscopic techniques, EPR, and NMR ^{51}V. The VO^{2+} species presence was confirmed by EPR analysis, which showed eight hyperfine bands, characteristic of the oxidovanadium(4+) ion, whose compound presents minimum formula $[VO(C_2H_4O_2N)(C_6H_7O_6)]$. The compound was classified as category 5, based on acute oral toxicity tests of OECD protocol 423. The biochemical analysis of the animals demonstrates that the compound did not cause damage to the liver and kidney tissues, since the AST, ALT, and creatinine data did not show a statistical difference between the control and treated groups at doses of 50, 300 and 2000 mg kg $^{-1}$ ($p < 0.05$). The histology analysis of liver and kidney tissues showed tissue preservation, confirming the non-toxicity of the oxidovanadium(4+) compound with therapeutic potential for the treatment of DM2.

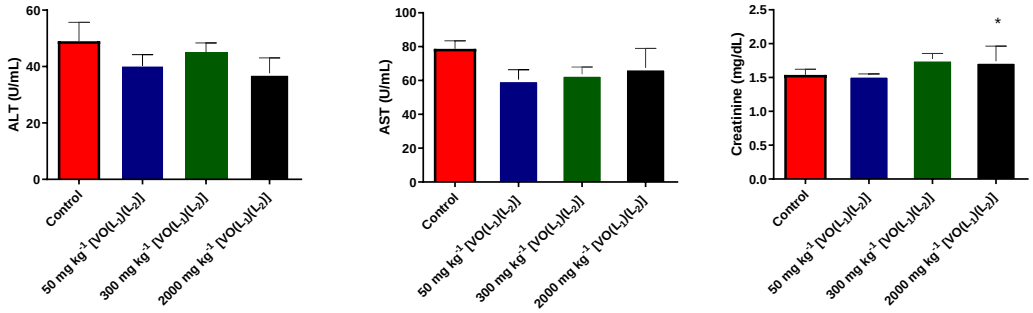

Figure 1. Bars graphs with ALT, AST and Creatinine values for different doses (Control, 50, 300 and 2000 mg kg $^{-1}$)

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