



Characterization of the renal safety profiles of coumacines

Abstract

The bottleneck step following the synthesis and characterization of the drug in the pharmaceutical setting is their adverse effects in the light of useful therapeutic doses. The kidney as the main clearance organ is the target for metereos of chemicals, xenobiotics, and drug metabolites. The present study aimed at characterizing the renal safety profile of newly synthesized coumarins-coumacine I and II. To do so, a mouse model was used with a total of 30 mice subclassified into 5 groups; Group 1 (Control group): given placebo vehicle IP for five consecutive days, Group 2: given Coumacine I at a dose of 250mg/kg IP, Group 3: given Coumacine I at dose 500mg/kg IP, Group 4: given Coumacine II at dose 250mg/kg IP, and Group 5: given Coumacine II at dose 500mg/kg IP, for each treated group coumacines given for five consecutive days. Blood samples were withdrawn at the end of the study from sacrificed animals and kidneys harvested for histological study. The results confirmed that serum creatinine and urea rose significantly ($p<0.05$) in the high-dose group compared to the control or low-dose group. Histological study revealed that mild degenerative changes are associated with a low dose of coumacine compared to moderate or severe degeneration associated with a high dose of either coumacines. This pilot study provides promising future direction for the discovery of new medication with anticoagulant therapy with improved pharmacokinetics or additional pharmacodynamic properties.