ABSTRACT

Objectives: To synthesize three series of new coumarin derivatives and to screen their anticoagulant activity in rabbits in order to define in more exact terms the structural features that responsible for the anticoagulant activity of coumarins.

Methods: the first series was synthesized by esterification the 7-hydroxycoumarin with benzoic acid, salicylic acid and 5-amino salicylic acid to give derivatives I-III; the second series was synthesized by the formation of amide linkage between 6-aminocoumarin and benzoic acid, salicylic acid and 5-amino salicylic acid to give derivatives IV-VI while the third series was synthesized by esterification the coumarin-6-carboxylic acid with phenol, resorcinol and m-chlorophenol to give derivatives VII-IX.

The anticoagulant activity of these derivatives (I-IX) was investigated in rabbits via Quick's one-stage method; the initial effect of each derivative on the prothrombine time for five rabbits before and after oral administration was measured.

Results: The chemical structure of these derivatives was characterized by physical and spectroscopic techniques as FTIR, UV and $^{13}$C-NMR spectra. Depending on prothrombin time measurements, derivatives II and VIII showed a significant anticoagulant activity through increasing the prothrombine time while the other derivatives showed an insignificant anticoagulant activity.

Conclusion: This study proposed that the coumarin derivatives contained an ester linkage at position 6 or 7 separated from a hydroxyl group by short carbon side chain may show anticoagulant activity.

Key words: Synthesis, coumarin, prothrombine time.