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Synthesis and pharmacological evaluation of prodrugs of NSAIDs

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Statement of the Problem: Non-steroidal anti-inflammatory drugs (NSAIDs) are widely used for the treatment of pain, fever and inflammation since time in memorial. Gastrointestinal irritation and ulcerogenicity occur on prolonged use of NSAIDs. Several mechanisms are known for the GI injury. These are local irritation produced by the acidic group of the NSAIDs or inhibition of prostaglandins in GI tract. A possible way to solve this problem is derivatization of the carboxylic function of NSAIDs into ester or amide mutual prodrugs.

Methodology & Theoretical Orientation: Steglich method of esterification (Neises and Steglich, 1978) was adopted for the synthetic part of the present work. Further confirmations were done on the basis of elemental analysis, IR, ¹H NMR and Mass spectrometric techniques. Pharmacological investigations of the synthesized prodrug include anti-inflammatory and analgesic activities.

The main aim objectivity of the present project was to reduce the ulcerogenicity so associated with the parent drug. Therefore the ulcerogenicity studies of all the synthesized compounds together with that of mefenamic acid were undertaken.

Conclusion & Significance: The results showed that in all the cases there was the decrease in the ulcer index as compared to the parent drug the mefenamic acid. Similarly, it was observed that when a simple physical mixture of Mefenamic acid with menthol and thymol were given there was practically no decrease in the ulcer index. Several biochemical parameters reported to be associated with the production of ulcers were determined to evaluate the existence of ulcers. In all the studies the result showed that animals treated with prodrugs gave the positive indication of fewer ulcers as compared to that of the pure drug.

Biography

Kamal Shah has his expertise in evaluation and synthesis of prodrugs. He is having knowledge of medicinal chemistry and has sharp hands-on spectroscopy. He has twenty-six research publications to his credit. Currently working on development chemo preventive medicines. He is a member of various professional and academic bodies like Association of Pharmaceutical Teachers of India (APTI), Institutional animal ethical committee (IAEC) and Board of Studies (BOS).

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