

# Reactivity of Piroxicam in Reaction of Mechanochemical Acylation

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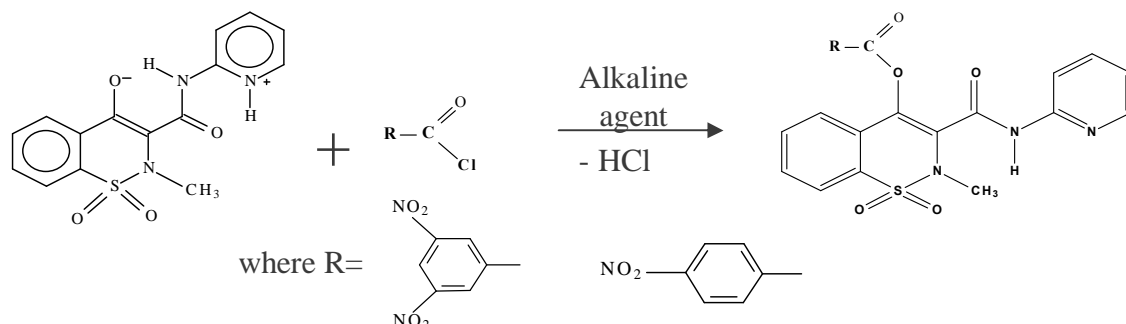
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In the continuing search for improved anti-inflammatory agents, a series of acyl piroxicam derivatives had been synthesized; they proved to be useful in alleviating inflammatory conditions after oral, parenteral, or topical administration [1,2]. The present study was attempted to obtain the acyl piroxicam derivatives by mechanical activation methods. Solid chloroanhydrides of organic acids were used as acylation agents, such as 3,5-dinitrobenzoyl chloride and 4-nitrobenzoyl chloride. Mechanochemical reactions were carried out in SPEX-8000 vibration mill and in AGO-2 planetary centrifugal mill with water-cooled vials. At the first stage, the transformation of piroxicam into zwitter-ionic form was performed under mechanical treatment assuming that it is more reactive than initial drug.

Mechanochemical synthesis proceeds according to a scheme stated below.



In the IR spectra of reaction mixtures, the changes were found in the regions of –NH and –OH stretching vibrations as well as in the regions of carbonyl group vibrations, suggesting that chemical reaction proceeds between piroxicam and acylation agents during mechanical treatment. A peak with retention time of piroxicam 4-nitrobenzoate synthesized according to a modified literature procedure [2] was observed by HPLC of reaction mixtures.

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## References

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