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## Reactions of Thiourea-S,S,S-Trioxides with $\beta$ -Diketo Enolates

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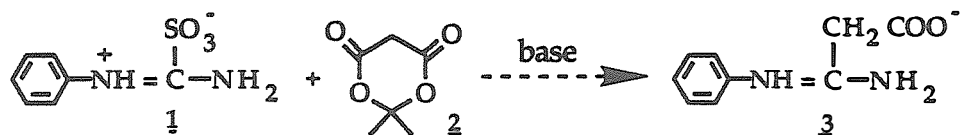
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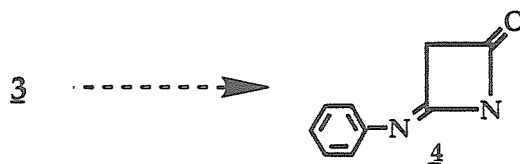
REACTIONS OF THIOUREA-S,S,S-TRIOXIDES  
WITH  $\beta$ -DIKETO ENOLATES

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Aminoiminomethanesulfonic acid derivatives are susceptible to nucleophilic attack by amino acids to form stable guanidino acids. Thus N-phenylaminoiminomethanesulfonic acid, PAIMSO (1), and other thiourea-S,S,S-trioxides should also undergo nucleophilic addition reactions with enolates (e.g. Meldrum's acid (2) and diethylmalonate). This would provide a convenient route to the synthesis of N-substituted amidino acetic acids (3). These compounds are of particular interest because homologous amidino carboxylic acids have been shown to have antifungal activity.



Furthermore, it may be possible to effect intramolecular ring closure of 3 to form a  $\beta$ -lactam (4), which is the active functionality in penicillin and cephalosporin antibiotics.



We have attempted the nucleophilic addition reaction of Meldrum's acid and diethylmalonate with PAIMSO under a variety of conditions.