

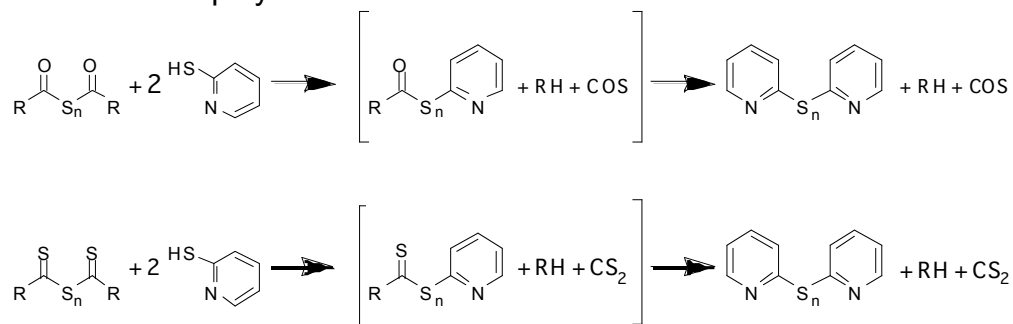
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Mechanisms and Selectivities of the Reactions of 2-Mercaptopyridine with Thiocarbonate and Thiocarbamate Polysulfide Substrates

2-Mercaptopyridine is able to interact with both symmetrical and unsymmetrical disulfide compounds to form Aldrithiol, a reagent used to quantify thiols commonly present in the body. In order to understand this reaction and to elucidate the mechanism for the formation of this product and related compounds, a series of polysulfide substrates were reacted with 2-mercaptopyridine and tracked using NMR spectroscopy. Evidence was developed for a two-step mechanism, involving the formation of an unsymmetrical intermediate which quickly proceeds to form products. Reaction rates were found to depend upon the nature of the substituents as well as the number of sulfurs in the thiocarbonate or thiocarbamate polysulfide substrates.



R = MeO-, EtO-, MeS-, or PhN(Me)- (NMA)
n = 2, 3, 4, 5

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