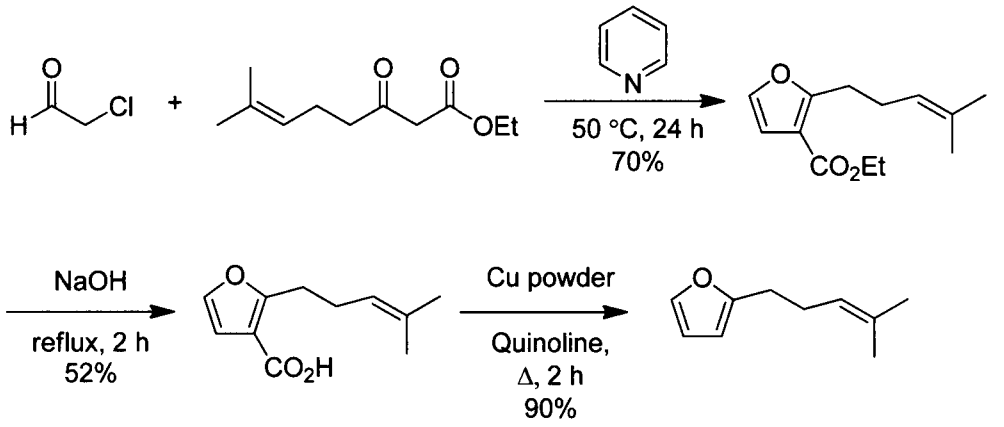
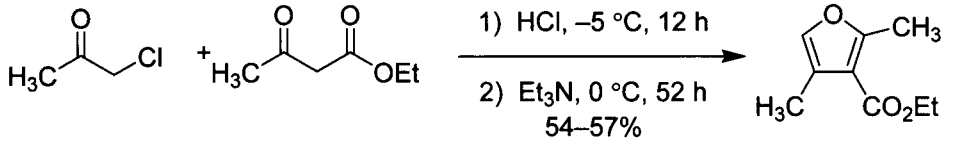
chloroacetaldehyde in pyridine led to the desired furan.[30] Saponification of the ester yielded the corresponding acid, which readily underwent decarboxylation to produce the final 2-alkylfuran, a derivative of rosefuran, in 33% over three steps.



The Feist–Bénary reaction has also been used to prepare trisubstituted furanoates as well. At present, only one 2,4-disubstituted 3-furoate has been prepared using the Feist–Bénary reaction. Reaction of chloroacetone with ethyl acetoacetate in cold hydrochloric acid followed by exposure to cold triethylamine provided ethyl 2,4-dimethyl-3-furoate in 54–57% yield over multiple trials.[31–33]



Several tetrasubstituted furan derivatives have been prepared by the Feist–Bénary reaction. For example, Stetter and Lauterbach demonstrated that 1,3-cyclohexanedione could serve as a β-dicarbonyl in combination with ethyl 2-chloroacetoacetate in the presence of potassium hydroxide to yield the corresponding fused tetrasubstituted furan derivative in good yield.[34]