REACTIONS OF VINYLOGOUS ACYL CYANIDES WITH ENAMINES

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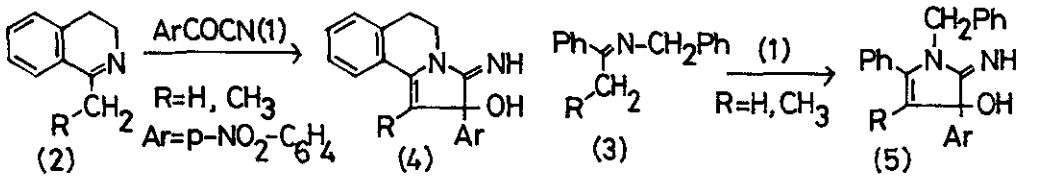
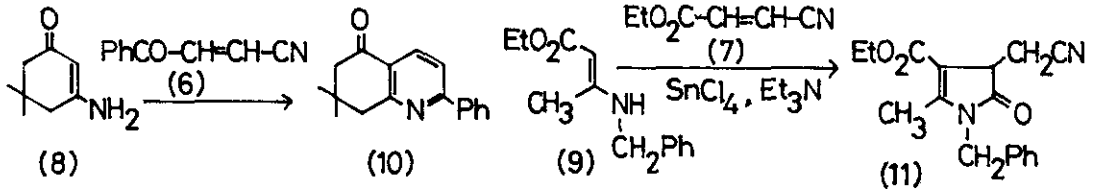
Recently, we have reported that the reactions of acyl cyanides (1) with the compounds (2) and (3) containing enolizable hydrogen gave the corresponding heterocyclic compounds (4) and (5), respectively.[1] The results have prompted us to



investigate the synthesis of heterocyclic compounds from vinylogous acyl cyanides such as (6) and (7) and enamines such as (8) and (9), and we now report the reaction of 6 with 8 to give pyridine (10), and one of 7 with 9 in the presence of $SnCl_4$ and triethylamine to give 2-pyrrolinone (11).



Reaction of 6 with 8 in acetic acid or toluene under reflux proceeded Michael addition of 8 at C-site to 6 at β-position of carbonyl group, cyclization of intermediately formed adduct, and elimination of HCN to afford pyridine 10. In contrast, reaction of 7 with 9 in the presence of $SnCl_4$ and triethylamine caused Michael addition of 9 at C-site to 7 at β-position of cyano group and cyclization of an intermediate to give 2-pyrrolinone 11. Further work is now being done to exprore the potentialities of these new reactions.

REFERENCES

1) This work was presented at the 8th International Congress of Heterocyclic Chemistry in Austria, Aug. 1981; M.Sakamoto et.al., Chem. Pharm. Bull., in press; and ibid., submitted.