REACTION OF β-AMINOCROTONAMIDE WITH AMINO ACID ESTERS

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2-(N-Acylaminomethyl)-6-methylpyrimidin-4(3H)-ones (3), which are synthesized from β-aminocrotonamide (1) and N-acyl derivatives (2) of amino acid esters, have been found to be novel and versatile precursors for the synthesis of imidazo[1,5-a]pyrimidines (4, 6, and 7) and imidazo[4,5-b]pyridines (5).

Reaction of 1 with 2 in the presence of sodium methoxide in methanol gave 3 in good yields. Heating of 3 with PPA at 100 - 110° gave 6,8-disubstituted 2-methylimidazo[1,5-a]pyrimidin-4(1H)-ones (4). However, heating of 3 with PPA at 180 - 190 gave 2-substituted 7-hydroxy-5-methylimidazo[4,5-b]pyridines (5).

Pyrimidinones (3) were treated with phosphorus oxychloride at 90° to give 6,8-disubstituted 2-chloro-4-methylimidazo[1,5-a]pyrimidines (6) and 4-chloro-2-methylimidazo[1,5-a]pyrimidines (7). Imidazo[1,5-a]pyrimidines (6 and 7) were also obtained from chlorination of 4 with phosphorus oxychloride.