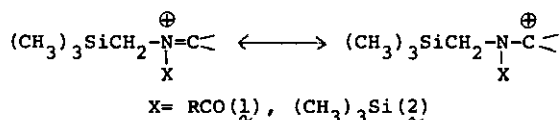


NEW 1,3-DIPOLAR CYCLOADDITION LEADING TO PYRROLIDINES

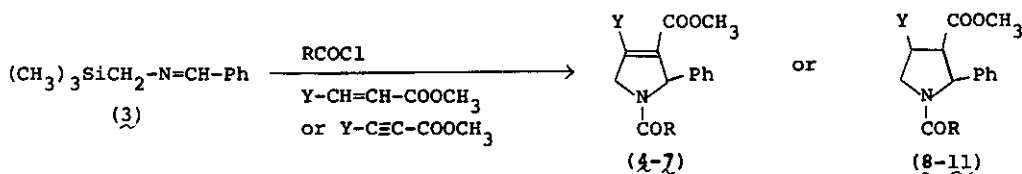
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As a part of our studies on the chemistry of trimethylsilylmethylamines, we now wish to report new 1,3-dipolar cycloadditions of ylides, $\text{>C=N=C}^{\oplus} \longleftrightarrow \text{>C=N}^{\oplus}\text{-C}^{\ominus}$ ($\text{X} = \text{RCO}, (\text{CH}_3)_3\text{Si}$), derived from intermediary trimethylsilylmethyliminium salts, (1) and (2), to olefinic and acetylenic dipolarophiles, leading to pyrrolidines.



A schiff base of trimethylsilylmethylamine (3) reacts with conjugated alkenes and alkynes in the presence of acyl chlorides to give N-acylated pyrrolidines and 2,5-dihydropyrroles. Path of this reaction involves a formation of intermediate, 1, followed by a heterolytic fission of its C-Si bond.



Another cycloaddition involves a reaction of 3 catalyzed by trimethylsilyl triflate and cesium fluoride. This catalytic process

involves regeneration of the triflate by a fission of C-Si bond of the intermediary 2. This cycloaddition is admirably suited for synthesizing N-unsubstituted pyrrolidines by simple procedure.

