Synthetic Entry to Tricyclic and Tetracyclic Quinuclidine Derivatives by Cycloaddition and Ring Transformation

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The (Z)-2-arylidene-quinuclidines **5 – 8** were synthesized. Their reaction with aliphatic dibasic functional reagents in both basic and acidic conditions afforded the fused heterocycles **9**, **10** and **11**. However, the reaction of arylidene derivative **5** with an aromatic dibasic functional reagent gave benzimidazole **13** in lieu of the anticipated tetracyclic system, quinuclidino[3,2-*e*]benzo[*b*]-1,4-diazepine **12**. Cycloadditions of **5** with different reagents gave the heterocyclic derivatives **17**, **19**, **22** and **23**. Acid-catalyzed cyclization of **5** with excess resorcinol gave **24**. Compounds **9a**, **19** and **24** showed antibacterial activities.

Key words: Quinuclidine, Annulation, Dibasic Functional Reagent, Antibacterial Activity