

ELECTROREDUCTIVE SYNTHESIS OF NITROGEN HETEROCYCLES

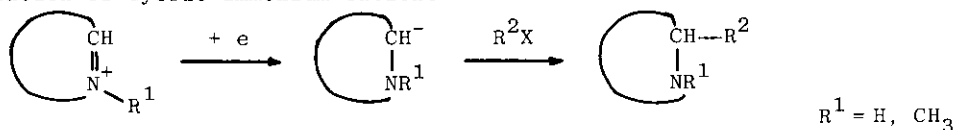
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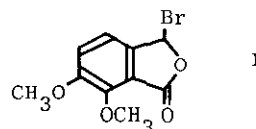
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Electroreduction of immonium salts of nitrogen heterocyclic compounds followed by the nucleophilic attack of the resulting anionic species to alkyl halides is a new versatile tool to introduce alkyl substituents into nitrogen heterocycles. Using this new method, following four patterns of reaction were exploited.

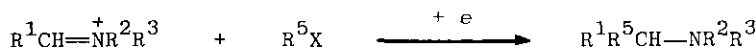
1. Alkylation of cyclic immonium cations



The cyclic immonium cations studied were the salts of isoquinoline, 3,4-dihydroisoquinolines, 4,5-dihydro-3-carboline, and benzthiazole. Alkyl halides were mainly derivatives of benzyl bromide and bromophthalides like I. More than thirty compounds were synthesized in reasonably high yields.

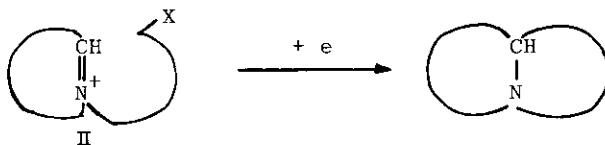


2. Alkylation of linear immonium cations



3. Annellation

The electroreduction of the immonium salts like II gave a new pattern of annellation by intramolecular alkylation.



4. Dimerization

