

SYNTHESIS OF ISOQUINOLINE OF INDOLE ALKALOIDS AND THEIR RELATED COMPOUNDS BY
USING ELECTROREDUCTION OF IMMONIUM CATIONS AS A KEY STEP

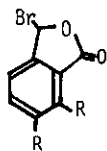
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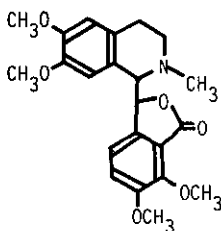
Electroreduction of immonium salts of nitrogen heterocyclic compounds followed by the nucleophilic attack of the resulting anionic species to alkyl halides is a new versatile tool to introduce alkyl substituents into nitrogen heterocycles. .

Using this new method, some new related compounds to isoquinoline and indole alkaloids were synthesized from the corresponding immonium salts and alkyl halides such as 3,4,5-trimethoxybenzyl bromide and bromophthalides I. Cordrastine (II) and compounds III are the typical examples of the products.

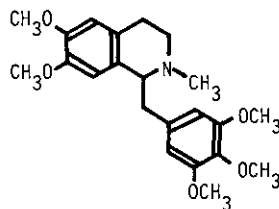


I

(R = H, OCH₃)

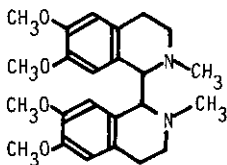


II

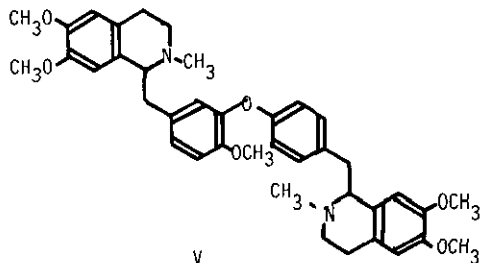


III

Furthermore, some alkaloid-type compounds (IV,V, etc.) possessing two units of tetrahydroisoquinoline skeleton were synthesized by electroreductive dimerization of immonium salts or by using two molecules of immonium salts and one molecule of dihalide.



IV



V