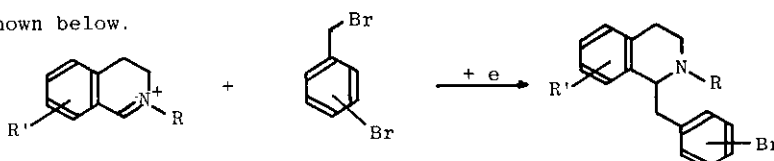


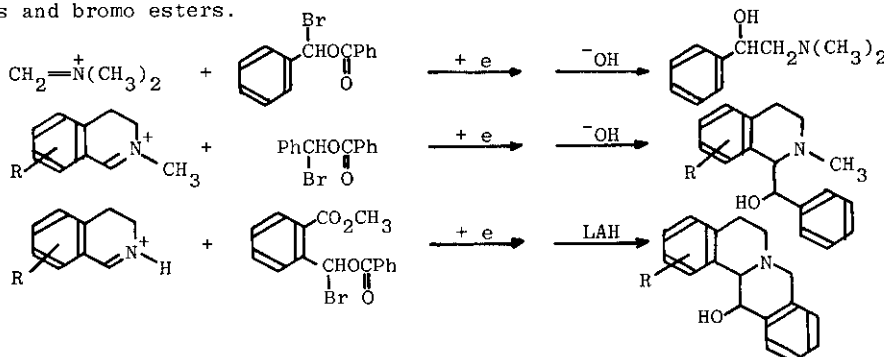
NEW ANNELETION AND ALKYLATION OF IMINIUM SALTS  
BY ELECTROREDUCTIVE METHOD USEFUL IN SYNTHESIS OF ALKALOIDS

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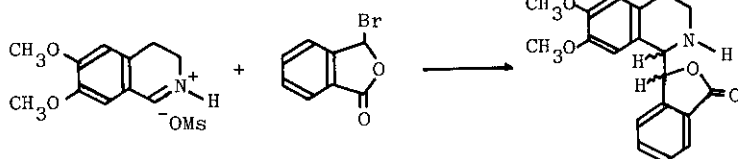
Electroreduction of iminium salts in the presence of alkyl halides afforded a variety of alkaloid derivatives. Our method is versatile in the synthesis of brominated isoquinoline alkaloids using iminium salt and bromobenzylbromide as starting materials as shown below.



Hydroxyamines were synthesized by the similar electroreductive coupling of iminium salts and bromo esters.



In the case of phthalide alkaloid synthesis, the electroreduction at  $-1.3$  V *vs.* SCE in the presence of a supporting electrolyte gave only one stereo isomer (erythro). On the other hand, the electroreduction of iminium salts without supporting electrolytes or electroreduction at more negative potential afforded two diastereomeric mixtures.



TBAI	Potential (V <i>vs.</i> SCE)	Yield (%)	erythro : threo
X	- 1.8	29	1 : 1
O	- 1.8	45.6	1 : 1
O	- 1.3	73.2	>90 : <10