ELECTRO-OXIDATIONS OF NITROGEN HETEROCYCLIC COMPOUNDS

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Preparative organic electrochemistry has one major advantage. The precise degree or amount of oxidizing or reducing power can be applied to a molecule in a controlled fashion to carry out specific reactions.

In the last ten years, this method has been applied to tetrahydroisoquinoline compounds by our group[1] and by Miller and Stermitz[2]. The observed reactions have involved dehydrodimerizations or dehydrointramolecular reactions and decarboxylations.[3] *In each case, the reaction seems to be* centered around phenol groups or an activated aromatic ring, although the *nitrogen does play a role in product formation.* Similar work has been carried out in the synthesis of Amaryllidaceae alkaloids by Tobinaga, Kotani and their coworkers.[4]

We have recently extended this work to indoles, β-carbolines, and tetrahydrocarbazoles. These compounds have similar electronic properties to isoquinolines and, like the isoquinolines, play an important role in alkaloid biosynthesis. As with the isoquinolines, both dehydroimerizations[5] and decarboxylations have been observed.[6]

In the lecture, the past work of our group and others will be summarized, and our most recent work will be presented. An attempt will be made to show how nitrogen is involved in the reactions.

REFERENCES

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