SYNTHESIS AND EXPLORATION OF THE PYRROLOISOINDOLINE ALKALOID

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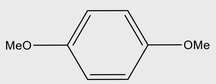
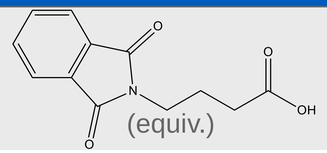
INTRODUCTION

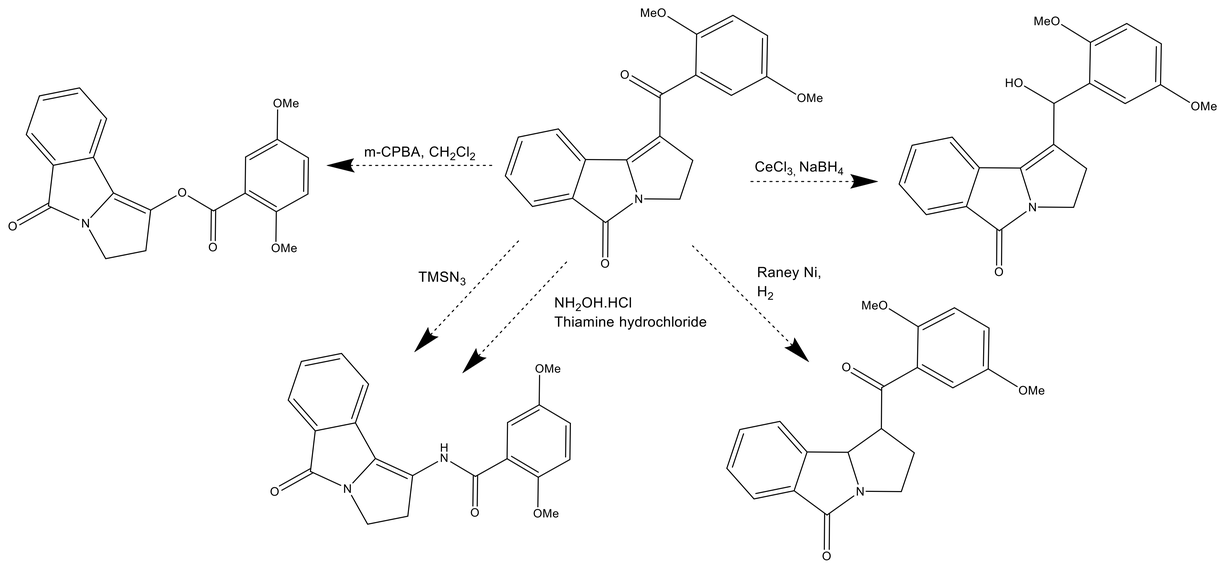
- The pyrroloisoindoline molecule is formed as a major byproduct from Friedel-Craft acylation/intramolecular aldol.
- This molecular structure provides opportunities for applications in the synthesis of natural products belonging to the “izidine” families.
- The Friedel-Craft acylation reaction has been optimized for higher yield, and several reactions have been performed to determine the functional group reactivities.

SYNTHESIS SCHEME

Optimized Studies for Fiedel-Craft Acylation Reaction

Entry	 (equiv.)	 (equiv.)	Temperature (°C)	Time (min)	Yield (%)
1	1.17	1.0	80-85	20	18
2	1.17	1.0	80-85	25	13
3	1.17	1.0	70-75	40	27
4	1.17	1.0	75-80	60	37

FUTURE IMPLICATIONS



CONCLUSION

- The highest yield conditions will be repeated to accumulate material.
- Reactions on the functional groups will be performed to determine their reactivities.

REFERENCES

1. Bremner, J. B.; Browne, E. J.; Davies, P. E.; Raston, C. *Aust. J. Chem*. **1980,** 33 (6), 1323-1334
2. Crabb, T. A.; Patel, A.; Newton, R. F.; Price, B. J.; Tucker, M. J. *J. Chem. Soc., Perkin Trans.1* **1982,** No. 0, 2783–2786.
3. Badiola, E.; Olaizola, I.; Vázquez, A.; Vera, S.; Mielgo, A.; Palomo, C. *Chem. – Eur. J.* **2017**, *23* (34), 8185–8195.
4. Yadav, J. S.; Reddy, B. V. S.; Reddy, U. V. S.; Praneeth, K. *Tetrahedron Lett.* **2008**, *49* (32), 4742–4745.
5. Mahajan, S.; Slathia, N.; Kapoor, K. K. *Tetrahedron Lett.* **2020**, *61* (20), 151859.
6. Liu, C.-C.; Hsieh, J.-C.; Korivi, R. P.; Cheng, C.-H. *Chem. – Eur. J.* **2015**, *21* (26), 9544–9549.

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