Unknown and One-Pot Strategy for Synthesis of Novel Pyrrolizinone Structures

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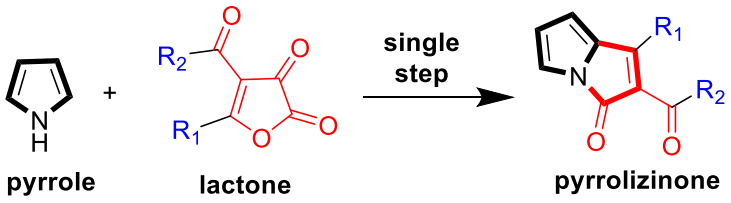
Pyrrolizinone, bicyclic bridgehead nitrogen skeleton, is valuable as a building block in medicinal chemistry and organic chemistry because it can be undergone a variety of reactions with different nucleophiles through C-1, C-2, and C-3 resulting in many useful synthetic and structural modifications.[1] Pyrrolizinone is a key unit of many natural products such as senaetnine, nor-rhazinicine, quinolactacide, chlorizidine, citriquinochroman. [2] Besides, it presents in some of the natural antibiotics as a heterocyclic core.[3] Therefore, the discovery and development of new, efficient, and suitable methods for the synthesis of pyrrolizinone is very important in terms of medicinal chemistry applications.



R_1	R_2
- tertbutyl	-tertbutyl
- 2-(OEt)-Ph	2-(OEt)-Ph
- N-Et-Pyrrole	-Ph
- N-Et-Pyrrole	-OEt
- Furan	-OEt
- *p*-(OMe)-Ph	*p*-(isop)-Ph
- *p*-(NO_2)-Ph	-OEt
- 2-(OEt)-Ph	-OEt

In our study; pyrrole and lactone[4] were reacted in an appropriate solvent at room temperature, and then one of the important alkaloid skeletons, pyrrolizinone, were synthesized in a unknown single-step strategy. Different pyrrolizinone derivatives having various substituents such as tertbutyl, phenyl, substituted phenyl, pyrrole, furane, -OEt, were yielded. Isolation of pyrrolizinones was done easily and the yields were observed up to 91%. One of the cyclization reactions was progressed in a gram-scale.

References

4) Morriello, G. J.; DeVita, R. J.; Mills, S. G.; Young, J. R.; Lin, P.; Doss, G.; Moore, S. *Bioorg. Med. Chem*. **2008**, *16*, 2156.
5) Mattocks, A.B.; Driver, E., *Toxicol. Lett*. **1987**, *38*, 315.
6) Sugie, Y.; et al. *J. Antibiot*. **2001**, *54*, 917.
7) Şener, A.; Menges, N.; Akkurt, M.; Karaca, S.; Büyükgüngör, O. *Tet. Lett*., **2008,** *49,* 2828.