SYNTHESIS OF (±)-LASUBINE-I AND (±)-SUBCOSINE-I

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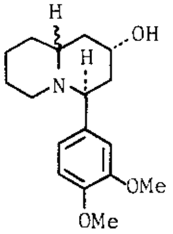
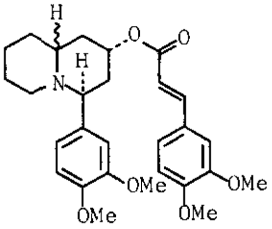
Lasubine-I (**1**), II (**2**), subcosine-I (**3**), and II (**4**) recently found in *Lagerstroemia subcostata* are structurally related to phenolic 4-phenylisoquinolizidines which have been postulated as intermediates in the biosynthesis of Lythraceae alkaloids. We report here the first total synthesis of some of these alkaloids. Our strategy to these alkaloids was based on stereo-, regio, and site-selective [3 + 2] cycloaddition of a nitrone.

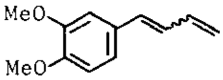
The reaction of a mixture of the *E*, *Z* isomers of the 1-arylbutadiene **5** with the nitrone **6** gave the *E* and *Z* cycloadducts **7** and **8** with the preference formation of the *exo* isomer (**7a** and **8a**) in each case. Treatment of **7** with hydrogen chloride followed by hydrogenation furnished (±)-lasubine-I (**1**) and (±)-2-epilasubine-II (**9**). When the same reaction was carried out on **8** (±)-lasubine-I was obtained stereoselectively as a sole product. The stereostructure of **9** was confirmed by alternative synthesis of **9** via *trans*-quinolizidinone **10**. Finally, the lithium salt of **1** was treated with 3,4-dimethoxycinnamic anhydride in the presence of 4-dimethylaminopyridine to afford (±)-subcosine-I (**3**).



1 β-H
2 α-H



3 β-H
4 α-H



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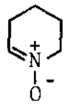

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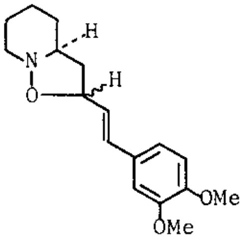
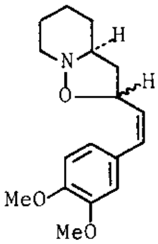
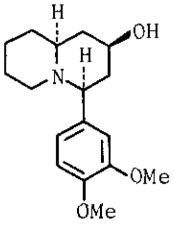


7a β-H
7b α-H



8a β-H
8b α-H



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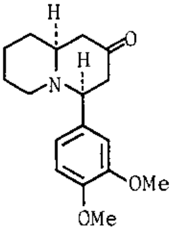

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