

Approach to the A-B Ring System of Forskolin through Biotransformation of Toluene

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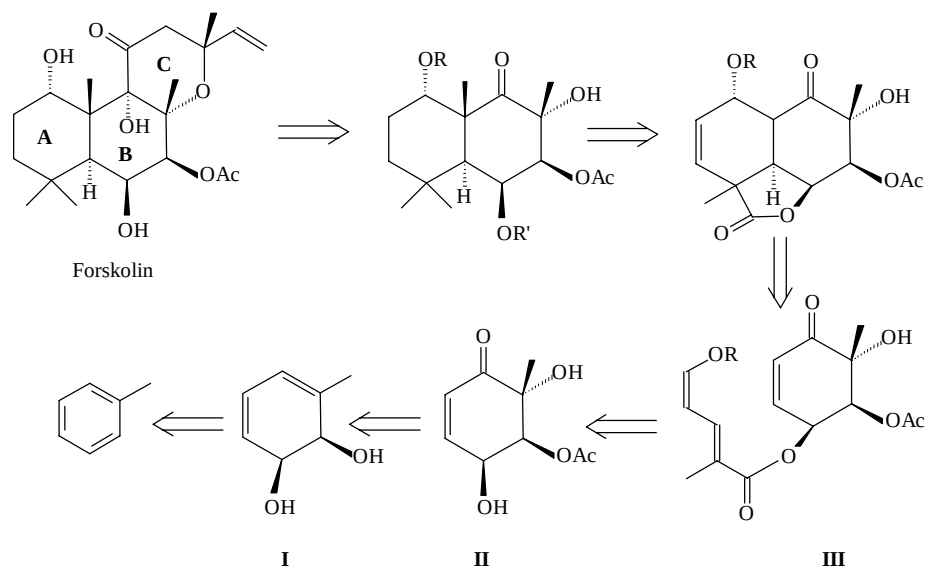
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Abstract: In the present work, we will intend to show that diol **I**, microbially derived from toluene using *Pseudomonas putida* 39D, is a suitable synthon for the synthesis of the A-B ring system of forskolin. The functionalization of diol **I**, to be used as ring-B, and the attempts of ring-A closure, will be disclosed.

Introduction

Chiral cyclohexadiendiols of the type of **I**, produced by microbial oxidation of arenes, have been extensively used as starting materials for the enantioselective synthesis of natural products. In this work, we present an approach to the synthesis of forskolin, based in a transfer of chirality from the homochiral diol **I** to the B ring of the diterpene, as shown in the retrosynthetic analysis.

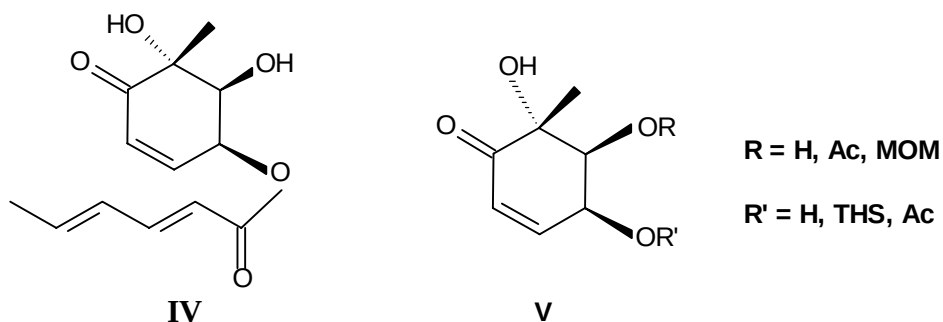


Experimental

We will present the optimization of the synthetic route to obtain a structure of type **II**, via oxidation reactions and selective protection-deprotection sequences of the hydroxyl groups. We will also present the synthetic approaches to an structure of type **III** which allows the ring A closure through an intramolecular Diels-Alder reaction. We will also discuss the attempts to close ring A using an intermolecular Diels-Alder cycloaddition, studying the viability of the reaction with different dienes and experimental conditions.

Results and Discussion

We have synthesized enone **IV**, as a model to study the intramolecular Diels-Alder reaction. To date, results have shown serious difficulties in terms of reactivity and stability of the model molecule. That's why we are trying different intermolecular cyclizations with molecules of type **V**, utilizing more reactive dienes.



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References and Notes

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3. Seoane, G.; Brovetto, M.; Schapiro, V.; Cavalli, G.; Sierra, A.; Padilla P. *New Journal of Chemistry* **1999**, *23*, 549-556.