

# Evolution of a Short Route to Strychnine by Using the Samarium Diiodide-Induced Cascade Cyclization as a Key Step

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## Abstract

This comprehensive report accounts the development of a highly diastereoselective samarium diiodide-induced cascade reaction of substituted indolyl ketones. The complexity-generating transformation with  $\text{SmI}_2$  allows the diastereoselective generation of three stereogenic centers including one quaternary center in one step. The obtained tetra- or pentacyclic dihydroindole derivatives are structural motifs of many monoterpene indole alkaloids, and their subsequent transformations gave way to one of the shortest approaches towards strychnine (14 % overall yield in ten steps, or 10 % overall yield in eight steps). During the course of this report we discuss the influence of substituents on the cyclization step, plausible mechanistic scenarios for the  $\text{SmI}_2$ -induced cascade reaction, diastereoselective reductive amination, and regioselective dehydratization protocols towards the pentacyclic core structure of *strychnos* alkaloids.

## Involved units

[Chemical Biology of Microbe-Host Interactions Christine Beemelmans](#) [Read more](#)

## Leibniz-HKI-Authors



**Christine Beemelmans**

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## Topics

[Natural product synthesis](#)

## Awards

Highlight in Chemistry Views:

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