# Poster Presentation
## Inter-Disciplinary Explorations in Chemistry (I-DEC 2018)

# 'Total Syntheses of Dimeric hexahydropyrrolo[2,3-*b*]indole Alkaloids by Means of Malonate Addition on to 3-Indolyl 2-Oxindoles'

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**Abstract:** Architecturally intriguing dimeric hexahydropyrrolo[2,3-*b*]indoline alkaloids (**1a-b**) and their rearranged scaffold (**2**) sharing vicinal quaternary stereocenters are widespread in nature and were isolated from various sources.[1,2] Because of the presence of vicinal all-carbon quaternary stereocenters in these target molecules, which invariably increases the difficulty of chemical synthesis, a limited number of reports to assemble such quaternary centers are known in literature.[1a] Biosynthetically, they are imagined to be arisen from dimerization of L-tryptophan followed by a sequential decarboxylative events. Interestingly, a variety of alkaloids of this family show antibacterial and cytotoxic activities.[1b] Therefore, because of their impressive biological activities, in addition to their complex architecture, it drew interest from synthetic community.

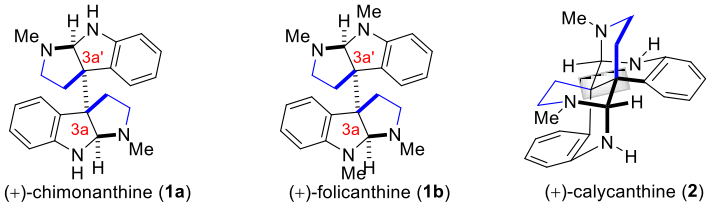
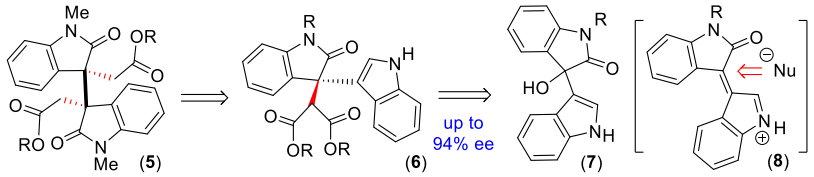



**Figure 1.**Selected hexahydropyrrolo[2,3-*b*]indole and related alkaloid.

Structurally, these alkaloids possess four contiguous stereogenic carbons, among those two of them are situated at the vicinal C3a-C3a' position (**1a-b** and **2**) and thus are challenging target for synthetic community.[2,3] Importantly, both enantiomers of chimonanthine (**1a**), folicanthine (**1b**), and calycanthine (**2**) are isolated from various sources. In this talk, I will discuss catalytic approach for the syntheses of either enantiomers of hexahydropyrrolo[2,3-*b*]indole via a key enantioselective malonate addition onto 3-hydroxy/sulfonyl-3-indolyl-2-oxindoles (Scheme 1).[4,5]




**Scheme 1.**Our asymmetric total syntheses of hexahydropyrrolo[2,3-*b*]indole alkaloids.

**References and Notes:**

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