Divergent Total Synthesis of (-)-Rhazinilam, (-)-Leucomidine B and (+)-Leuconodine F

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(-)-Rhazinilam (**1**), (-)-leucomidine B (**2**) and (+)-leuconodine F (**3**, Figure 1) are three structurally distinct members of the monoterpene indole alkaloids. (-)-Rhazinilam (**1**), with its unique axially chiral tetracyclic structure and potent *in vitro* tubulin-binding properties, has triggered a significant amount of synthetic efforts. One total synthesis of (-)-leucomidine B (**2**) and leuconodine F (**3**), respectively, has been reported and there is a recent resurge on the synthesis of the leuconodine family having an unusual [5.5.6.6]diazafenestrane system.[1]

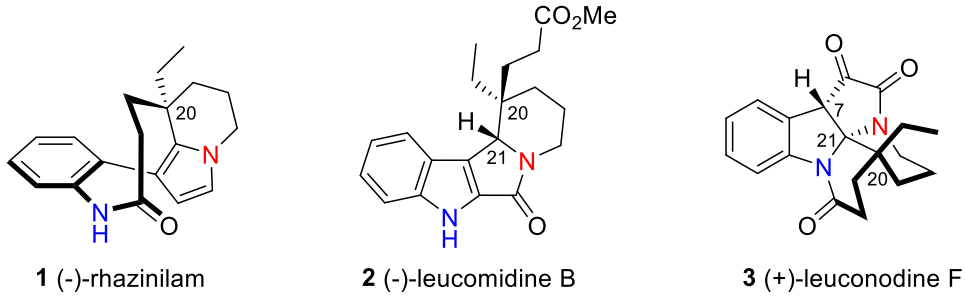

Figure 1 *Structure of rhazinilam, leucomidine B and leuconodine F*

We will detail a unified strategy that allowed us to accomplish the total syntheses of these three natural products from a simple cyclopentene derivative with complete control of stereoselectivity.[2]

[1] Previous syntheses of (-)-rhazinilam, (-)-leucomidine B and (+)-leuconodine F from our group, see: a) Gualtierotti, J.-B.; Pasche, D.; Wang, Q.; Zhu, J. *Angew. Chem. Int. Ed.* **2014**, *53*, 9926–9930; b) Xu, Z.; Wang, Q.; Zhu, J. *J. Am. Chem. Soc.* **2015**, *137*, 6712-6724.

[2] Dagoneau, D.; Xu, Z.; Wang, Q.; Zhu, J. *Angew. Chem. Int. Ed.* **2016**, *55*, 760-763.