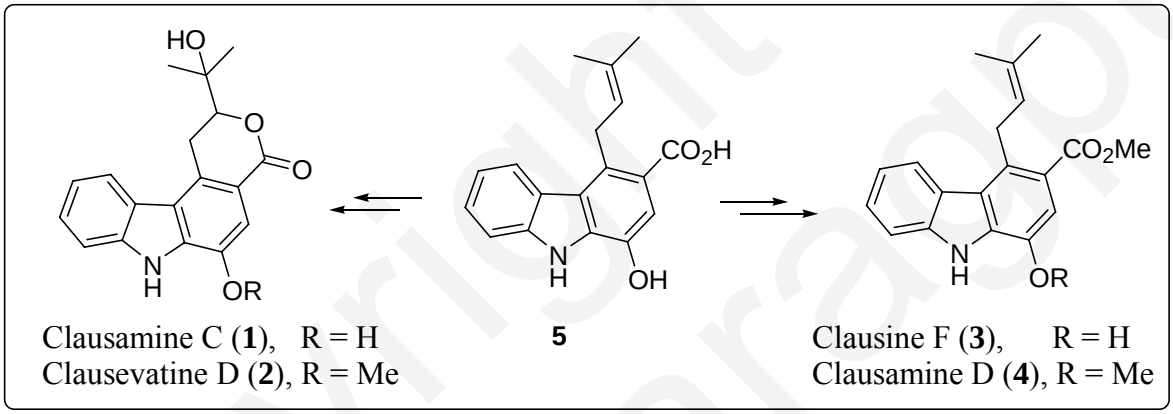
Abstract

A brief and regiospecific route has been developed for the total synthesis of prenylcarbazole alkaloids such as clausamine C (**1**), clausevatine D (**2**), clausine F (**3**) and clausamine D (**4**) through a common intermediate **5**. The hydroxyacid **5** was elaborated to the natural products by employing three key steps which are i) a selective demethoxycarbonylation, ii) a *para*-Claisen rearrangement and iii) an anionic [4+2] cycloaddition. An unprecedented oxidative cyclization of hydroxyacid **5** has led to the syntheses of two pyranocarbazolone alkaloids clausamine C (**1**) and clausevatine D (**2**).

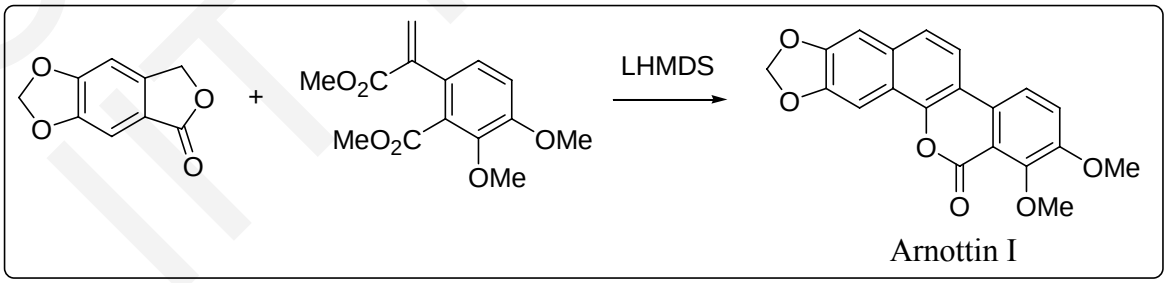


Clausamine C (**1**), R = H
Clausevatine D (**2**), R = Me

5

Clausine F (**3**), R = H
Clausamine D (**4**), R = Me

2-Alkyl/aryl-1-naphthols have been directly and regiospecifically synthesized in one pot by annulation of phthalides with α-substituted acrylates in the presence of LDA or LHMDS. The method involves an unusual lithium assisted retro-ene fragmentation step. The method has been employed to achieve a 3-step total synthesis of arnottin I, a naphthobenzopyranone natural product as depicted below.



Arnottin I

Key words: prenylcarbazole, oxidative cyclization, pyranocarbazolone, naphthobenzopyranone