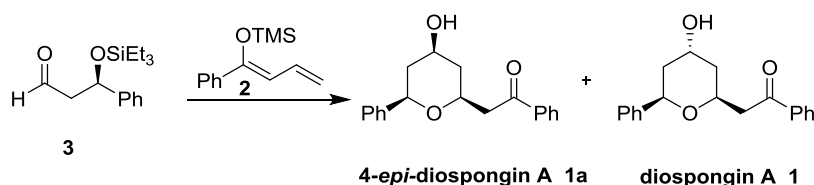


SYNOPSIS

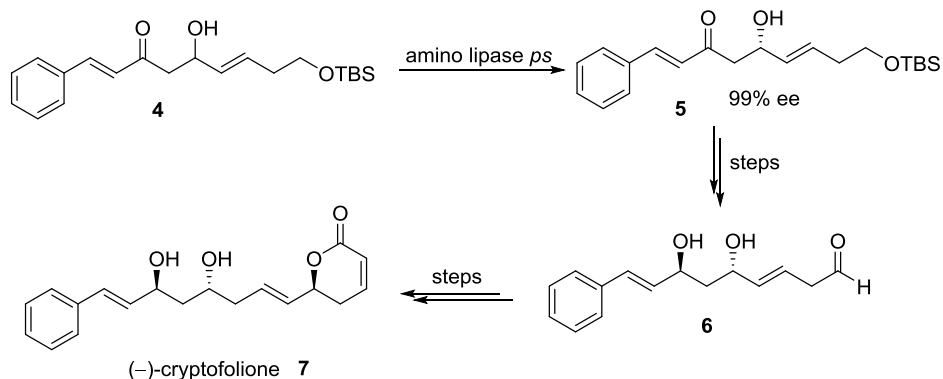
The thesis entitled “*Total synthesis of natural products diospongin A, cryptofolione, cryptopyranmoscatone B2, Sch725674 and towards the total synthesis of palmerolide C*” is divided into two chapters.

First chapter of the thesis describes the total synthesis of tetrahydropyran containing natural products, diospongin A, cryptopyranmoscatone B2, hydroxy δ -lactone containing natural product cryptofolione and macrolactone Sch 725674. Section A of this chapter deals with total synthesis of diospongin A **1**, involving a vinylogous Mukaiyama aldol reaction of the silyl enol ether **2** with the aldehyde **3**. The natural product was synthesized in 5 linear steps from benzaldehyde with 13.2% overall yield (Scheme 1).



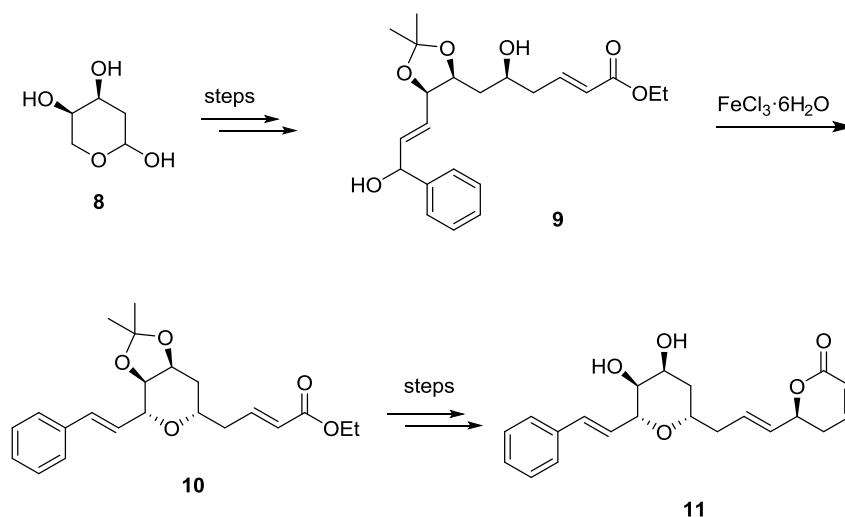
Scheme 1: Total synthesis of diospongin A 1.

Section B of this chapter, describes the total synthesis of cryptofolione **7**, a δ -lactone containing a dihydroxy unit in the side chain. Enzymatic resolution of a β -hydroxy ketone **4** was utilized for the synthesis of aldehyde **6**, which was further elaborated to access cryptofolione **7**. The key reactions in the synthesis include base catalyzed isomerisation of aldehyde with DBU, Brown's allylation and ring closing metathesis reaction (Scheme 2).



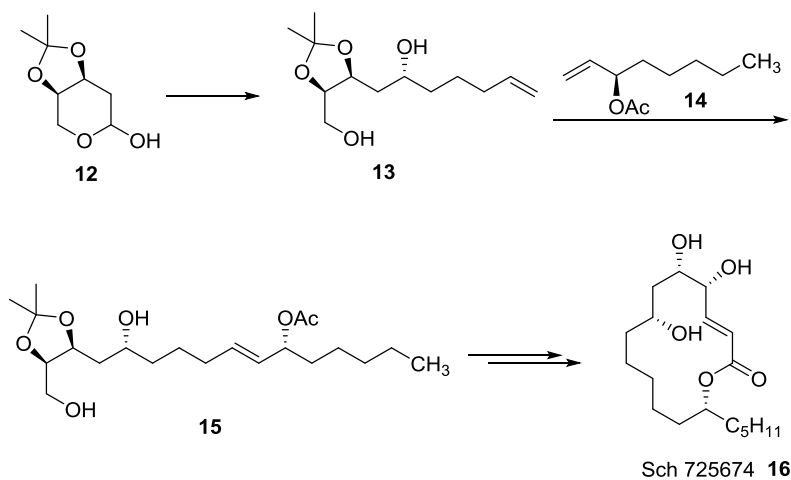
Scheme 2: Total synthesis of cryptofolione 7.

Section C of chapter 1 discloses the total synthesis of cryptopyranmoscatone B2 (**11**), a natural product possessing a tetrahydropyran and δ -lactone units. Iron (III) chloride catalyzed cyclization of the diol **9** derived from commercially available lactol **8** furnished the tetrahydropyran is the key reaction in the synthesis (Scheme 3).



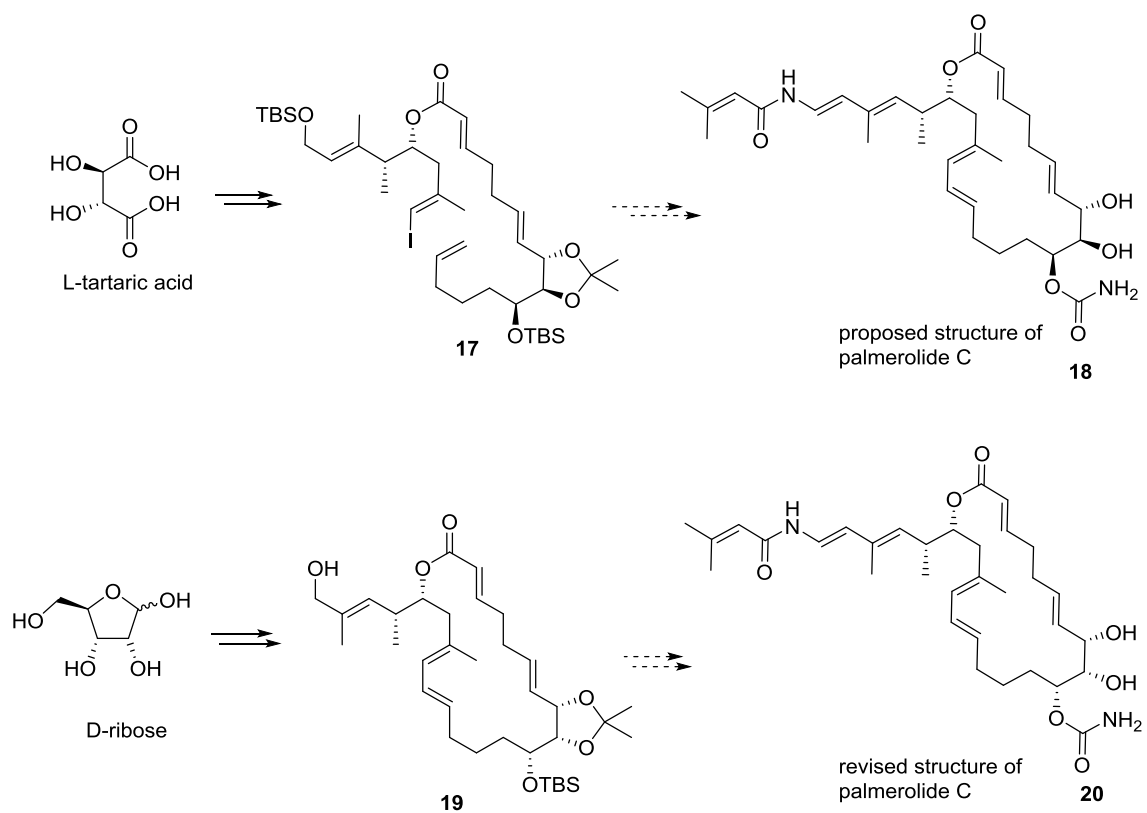
Scheme 3: Stereoselective total synthesis of cryptopyranmoscatone B2 (**11**).

. Section D of chapter 1 deals with the total synthesis of (+)-Sch 725674 (**16**) starting from known lactol **12** derived from 2-deoxy ribose. Addition of 4-pentenylmagnesium bromide to lactol **12** provided the diol **13**. Elaboration of **13** with the acetate **14** by olefin cross metathesis and further transformations led to Sch 725674 (**16**) (Scheme 4).



Scheme 4: Total synthesis of (+)-Sch 725674 (**16**).

Chapter 2 of the thesis is concerned with the efforts towards the total synthesis of palmerolide C. During the course of present investigation, the putative structure of palmerolide C was revised. The efforts concerning the synthesis of putative and revised structures of palmerolide C **18** and **20** from tartaric acid and D-ribose is described (Scheme 5).



Scheme 5: Towards the total synthesis of the proposed and revised structure of palmerolide C.