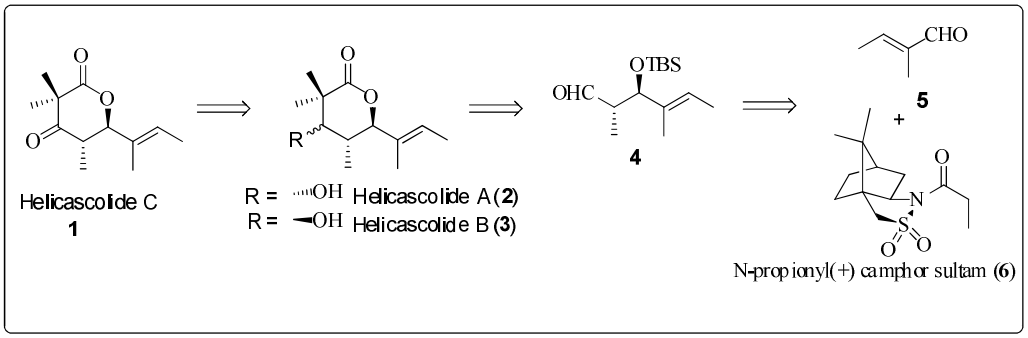
ABSTRACT

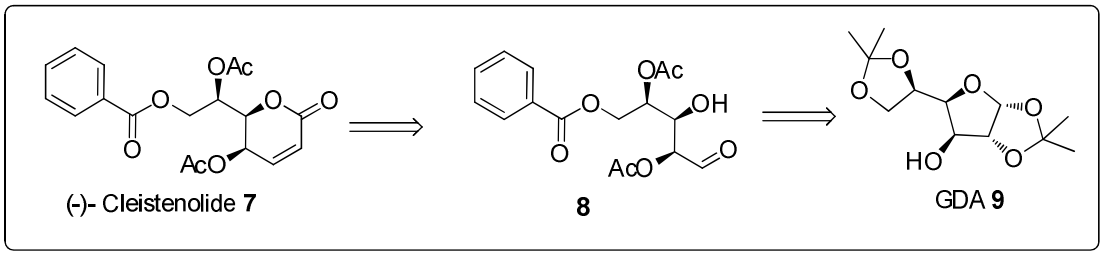
CHAPTER I: This chapter deals with introduction of lactones containing natural products, and few strategies employed during their synthesis and our contribution to lactones formation using different methods.

CHAPTER II: The concise total synthesis of Helicascolide A, B & C using Oppolzer's sultam aldol and stereoselective Mukaiyama aldol reaction. The aldehyde **4** was synthesized from tiglic aldehyde **5** by using Oppolzer's protocol, helicascolide A and B were achieved by employing stereoselective aldol from aldehyde **4.**



Retrosynthetic analysis

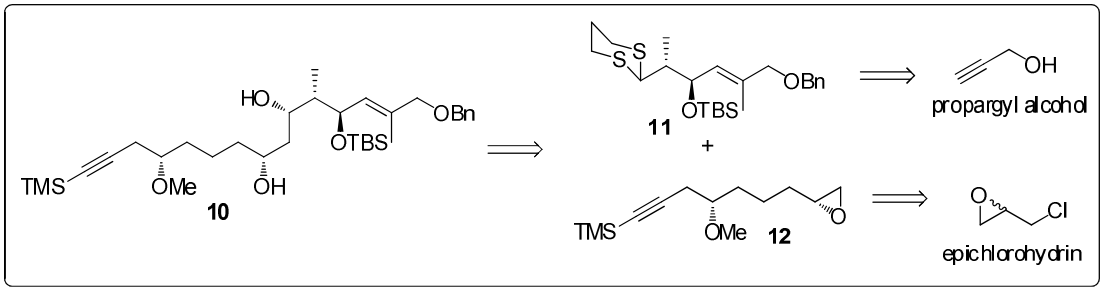
CHAPTER III: A concise total synthesis of (−)-Cleistenolide was accomplished by sequential transformation from D-glucose diacetonide **9** in six steps.



Retrosynthetic analysis

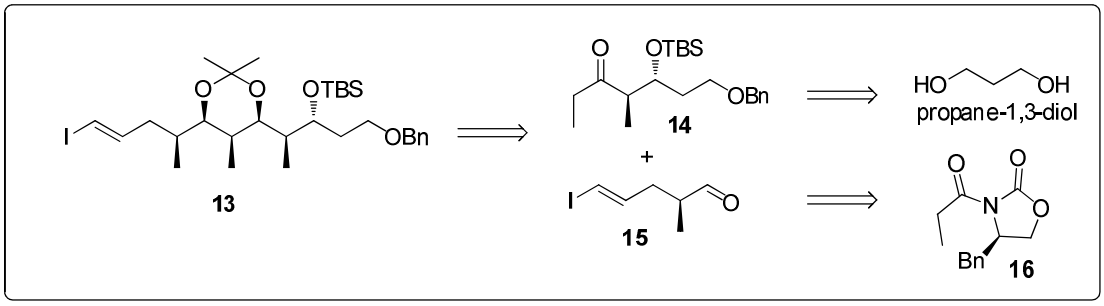
CHAPTER IV: Stereoselective synthesis of C17-C31 fragment of Etnangien was described in this chapter. The retrosynthesis indicating the fragment **10**

was achieved by coupling of two synthons dithiane **11** and epoxide **12**; these were accomplished from propargyl alcohol and epichlorohydrin respectively.



Retrosynthetic analysis

CHAPTER V: Stereoselective synthesis of C32-C42 fragment of Etnangien was described in this chapter. In retrosynthetic analysis, the target fragment synthesized by 1,4-*syn* aldol from ethyl ketone **14** and aldehyde **15**; ethyl ketone was synthesized from 1,3-propanediol by using Sharpless epoxidation as a key step, vinyl iodide aldehyde was accomplished from oxazolidinone **16** and propargyl bromide by employing asymmetric alkylation as key reaction.



Retrosynthetic analysis