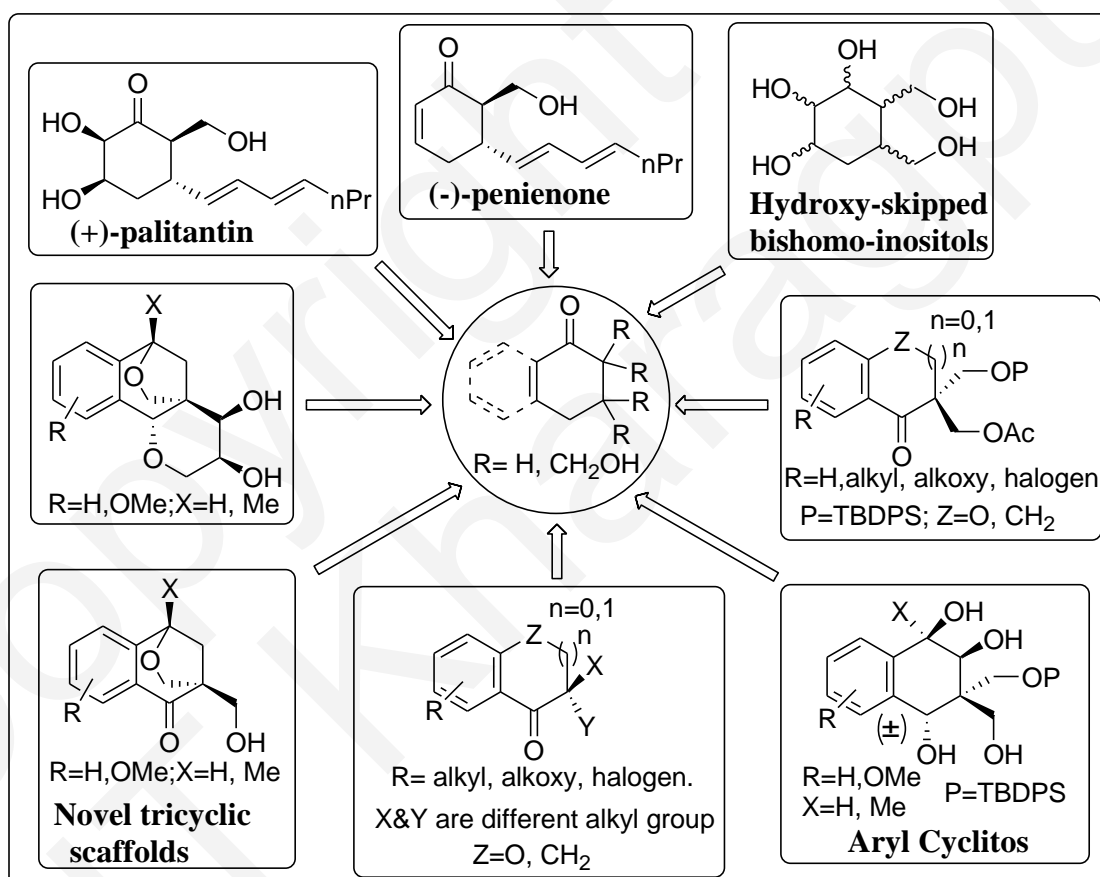


**Thesis Title: Hydroxymethylated Cycloalkenones Privileged Small Molecular Multifunctional Scaffolds for Asymmetric Synthesis of Bioactive Natural Products and Related Molecules**

**Abstract:** The ever-increasing claim for the production of natural products and their analogues for pharmaceutical applications is the basis of research efforts on the development of convenient synthetic pathways. For this purpose various synthetic strategies e.g., DOS (*diversity oriented synthesis*), TOS (*target oriented synthesis*) and BIOS (*biology oriented synthesis*) have been successfully utilized. Combinatorial biocatalysis, an emerging technology in DOS strategy have been successfully applied for the synthesis of focused libraries of complex natural products and related molecules based on hydroxymethylated cycloalkenone scaffolds.



**Scheme-1.** Hydroxymethylated cycloalkenones scaffolds based synthesized natural products and related molecules.

**Key Words:** Asymmetric synthesis, Chemo-enzymatic transformation, Natural products, *Glycosidase* inhibition, Quaternary stereocentre, Designed cyclitols, Halocyclization.