Title: **Lewis-acid-promoted selective isomerization of oxetanes. New synthetic approach towards γ-chiral alcohols**

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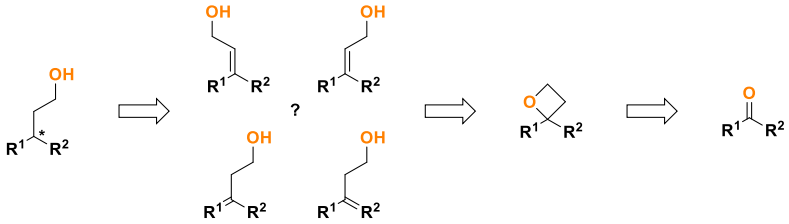
The synthesis of enantiomerically pure compounds is one of the main challenges in organic synthesis. Particularly, γ-chiral alcohols are a valuable chemical motif and a useful building block, especially in the pharmaceutical industry. Even though there are several synthetic methodologies already studied, they offer poor atom economy reactions and there is a need of separation steps, consequently lowering the final yield. For this reason, a new approach would be highly desired.

Most promising approaches undergo isomerization reactions that are highly atom economy efficient and generate low to no residues. Still there is not a selective procedure to the isomerization of oxetanes.

In this work, a new general and greener synthetic pathway has been developed. This new approach is based on the Lewis-acid-promoted selective isomerization of oxetane rings. Afterwards, the correspondent olefin is subjected to an asymmetric hydrogenation using iridium-based catalysts.

A standard substrate has been tested in order to optimize the methodology. Finally, a broad scope of substrates has been studied to generalize the process.



Retrosynthetic approach towards γ-chiral alcohols

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