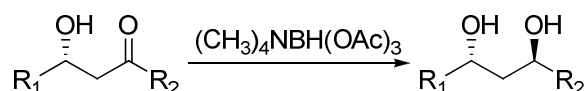


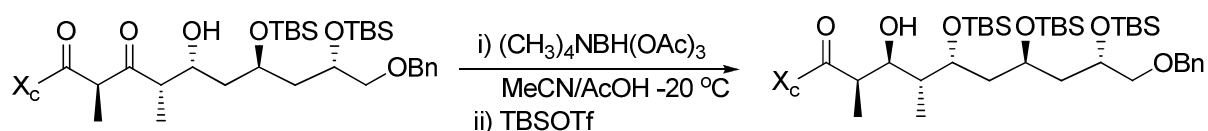
Selective Reduction of β -Hydroxy Ketones

The reduction of β -hydroxy ketones to give the corresponding 1,3-*anti*-diols has been accomplished by internal hydride delivery. Reduction occurs intramolecularly as a result of the attenuated reactivity of the reducing agent (**Scheme 1**).¹



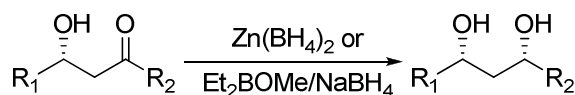
Scheme 1: Internal hydride delivery.

The synthesis of Oasomycin A by Evans utilised a reduction of a δ -hydroxy- β -ketoimide (**Scheme 2**).² There are countless other examples of this methodology in synthesis.



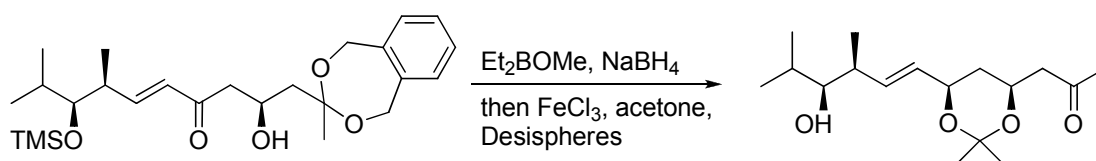
Scheme 2: Internal hydride delivery in synthesis.

Access to the analogous 1,3-*syn*-diols has been achieved by external hydride delivery. Both chelating metal hydrides³ and alkoxydialkylboranes in the presence of sodium borohydride⁴ will perform this transformation *via* axial attack (**Scheme 3**).



Scheme 3: External hydride delivery.

This methodology was utilised in the Sammakia synthesis of oxopolyene macrolide RK-397 (**Scheme 4**).⁵



Scheme 4: External hydride delivery in synthesis.

References:

1. *Tetrahedron Lett.* **1986**, 27, 5939-5942.
2. *Angew. Chem. Int. Ed.* **2007**, 46, 541-544.
3. *Tetrahedron Lett.* **1983**, 24, 5385-5386.
4. *Tetrahedron Lett.* **1987**, 28, 155-158.
5. *Angew. Chem. Int. Ed.* **2007**, 46, 1066-1070.