Reduction of lactones

Diisobutylaluminium hydride (DIBALH) is widely used in the catalytic reduction of lactones to lactols. However this reagent is air- and moisture-sensitive and generally requires reaction temperatures of -78°C.

Verdaguer, X., Berk S.C. and Buchwald, S.L. [*J. Am. Chem. Soc.* (1995) 117, 12643–12644] describe an efficient catalytic process for the preparation of five- and six-membered lactols from their corresponding lactones involving a combination of a titanocene bis-(phenoxide) with polymethylhydrosiloxane in the presence of a catalytic amount of tetrabutylammonium fluoride (Scheme 1). This process proceeds at room temperature and has a further advantage over the use DIBALH in that the reagents are air-stable and inexpensive.

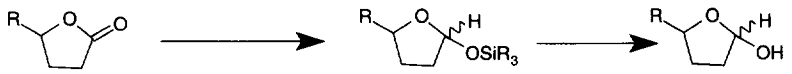
Novel optically pure triols

Humphrey, A.J. and coworkers [*J. Chem. Soc. Chem. Commun.* (1995) 2475–2476] report the synthesis of enantiomerically pure α-hydroxyaldehydes from α-hydroxycarboxylic acids using silyl protection followed by diisobutylaluminium hydride reduction and subsequent deprotection under acid conditions. The condensation of the (R)-α-hydroxyaldehydes **I** with lithium hydroxypyruvate **II** using *E. coli* transketolase yielded novel [3S,4R] chiral triols **III** (Scheme 2).

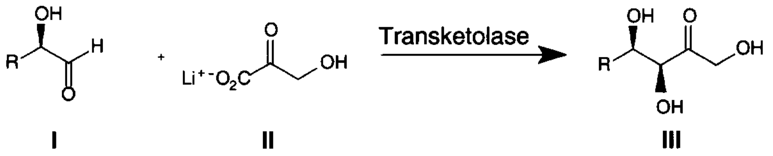
Indirect enzymic phosphorylation

D'Arrigo, P. and coworkers [*J. Chem. Soc. Chem. Commun.* (1995) 2505–2506] report an indirect method for the phosphorylation of primary alcohols using phosphatidylcholine as the initial starting material. In the example presented, phospholipase D was used to catalyse the substitution of the choline head group for dihydroxyacetone **IV**. Hydrolysis of the resultant phospholipid **V** using phospholipase C yielded dihydroxyacetone **VI**.

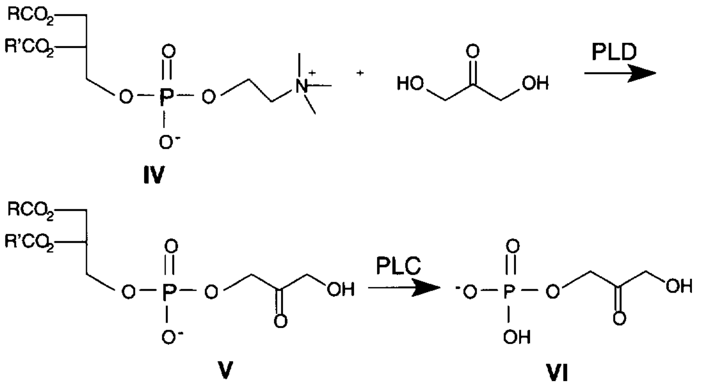
Scheme 1



Scheme 2



Scheme 3



Scheme 4