



CalSelect[®] LT (LiTEBH) for Life Science Applications

Ascensus CalSelect[®] LT 1.7M is a higher concentration super hydride, that offers high purity and a high degree of flexibility. It is available in quantities from kilograms to commercial volumes, to support the needs of our customers from lab-to-launch while ensuring consistent quality.

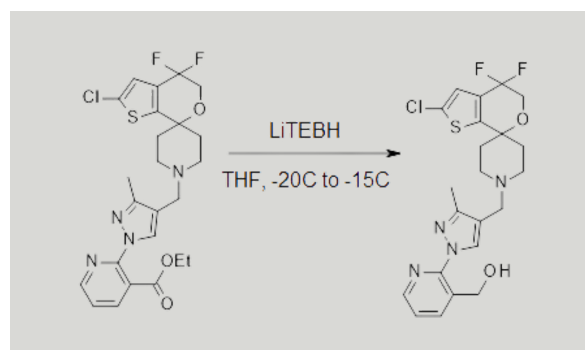
◇ CalSelect LT 1.7M (lithium triethylborohydride)

Calselect LT (LiTEBH) is a powerful hydride reagent useful in a wide variety of chemical reactions and transformations. Selectivity and specificity is important in a reaction to increase the yield of the desired product and minimize by-product formation. High selectivity, reactivity, and specificity can lead to simpler, less expensive purification routes to the desired product.

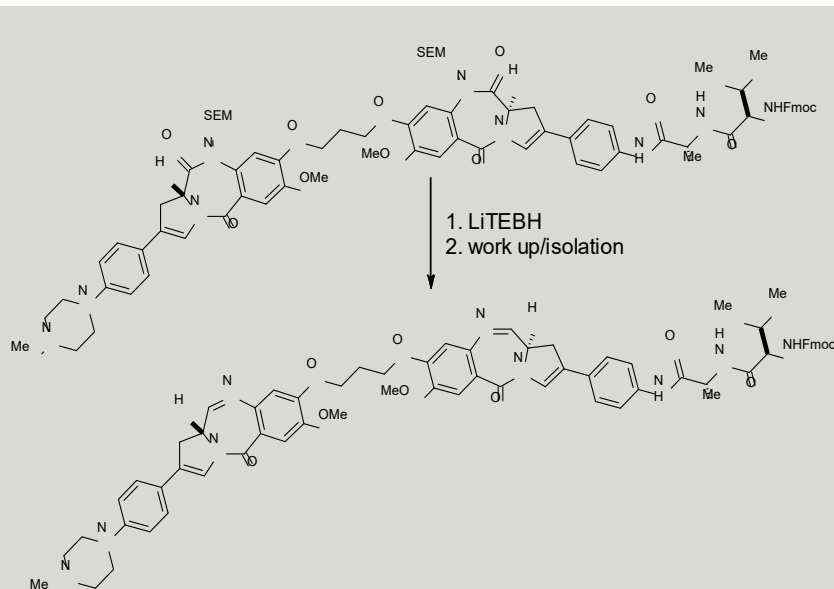
Applications of lithium triethylborohydride include reduction of ketones, esters, and other functionalities. The higher concentration super hydride, Calselect LT 1.7M, offers advantages in overall yields, cycle time, and throughputs to help chemists achieve their intended reactions.

⊙ Selective ester reduction

Calselect LT is an excellent selective reducing agent for ester functionalities. When compared with other reducing agents such as DIBAL-H, and vitride, Calselect LT produced the best results. Multikilograms of the ORL-1 receptor antagonist compound were synthesized using Calselect LT at -20C reducing conditions followed by recrystallization with isopropyl alcohol [Org. Proc. Res. Dev. 2015, 19, 1568].



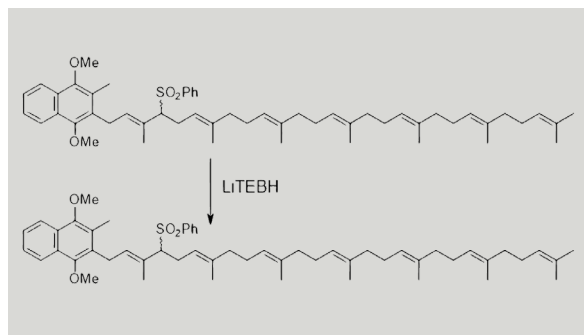
▶ Selective amide reductions



Calselect LT demonstrates its reactivity and selectivity during the reduction of bis-amide to hemiaminal intermediate. The bis-amide reduction was effectively optimized reducing hydride equivalents and improving purity of intermediate of >29% to provide critical cGMP amounts of the hemiaminal intermediate for clinical trials. [Org. Proc. Res. Dev. 2021, 25, 799].

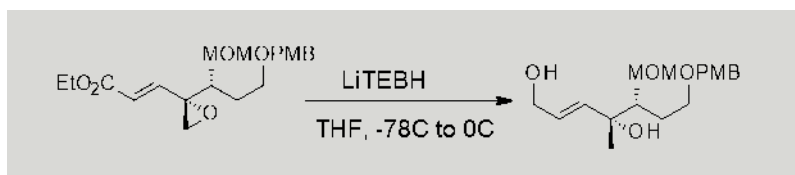
◈ Squalene synthesis

Calselect LT is highly effective for desulfonation reactions. Witkowski and co-workers demonstrated the desulfonation process during the elegant convergent Menaquinone 7 synthesis [Org. Proc. Res. Dev. 2016, 20, 1026].

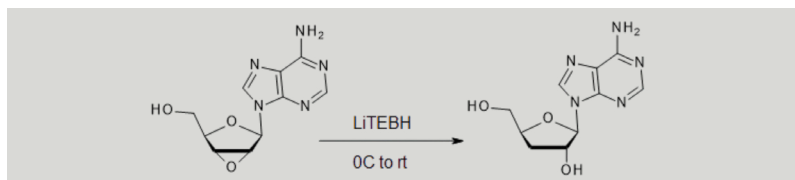


◈ Regioselective epoxide reduction

Calselect LT is an excellent reducing agent to regioselectively reduce epoxides. Shown below, Hatakeyama and co-workers regioselectively opened key epoxide intermediate and ester with Calselect LT in the synthesis of fostriecin. They reported excellent 98% yield in the reduction [Chem. Rev. 2016, 116, 15035].

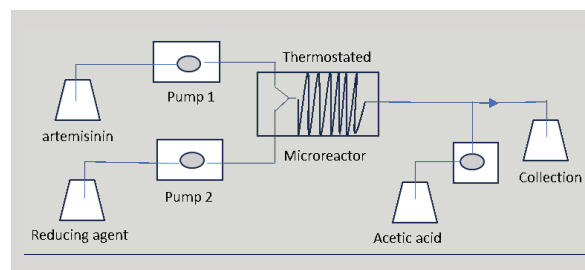


Hansske and Robins regioselectively reduced epoxide intermediate utilizing Calselect LT in the synthesis of cordycepin adenosine compound in high yields. Calselect LT was a key addition to the process at 0°C to increase overall yield of the regioselective reduction [Chem. Rev. 2016, 116, 14379].



◈ Flow synthesis

Calselect LT was the most effective reducing agent in terms of reaction and yield in the flow reduction of artemisinin ester to dihydroartemisinin intermediate. Short residence time and full conversion was obtained with Calselect LT. Other reducing agents such as lithium tri-ter-butoxyaluminum hydride, and sodium bis(2-(methoxyethoxy) aluminum hydride provided lower yields than Calselect LT (46–67% versus 94%, respectively). Calselect LT is an excellent stoichiometric reducing agent for flow type reduction synthesis [Org. Proc. Res. Dev. 2012, 16, 1039].





Headquartered in Bellevue, WA, **Ascensus Specialties** is a global leader in catalysts, ligands, building blocks, and specialty reagents. Our 60+ years of synthetic knowhow, allows us to bring additional value to our clients through our custom synthesis and GMP services. From world-class manufacturing facilities in Elma, WA, Evans City, PA, Newburyport, MA, and Cambridge, UK, Ascensus has a global reach that ensures our clients can consistently manufacture their products to the highest standards.

▶ THE ASCENSUS ADVANTAGE

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