This article was downloaded by: [Northwestern University] On: 19 December 2014, At: 11:53 Publisher: Taylor & Francis Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Synthetic Communications: An International Journal for Rapid Communication of Synthetic Organic Chemistry

Publication details, including instructions for authors and subscription information:

http://www.tandfonline.com/loi/lsyc20

Lithium Tetrafluoroborate: A Mild and Efficient Reagent for the Cleavage of Dimethoxytrityl Ethers

Angi Chen^a, Yong Zheng^a & Xinfeng Zhou^a

^a Department of Chemistry, Xiamen University, Xiamen, Fujian, 361005, P. R. China Published online: 17 Sep 2007.

To cite this article: Angi Chen, Yong Zheng & Xinfeng Zhou (1999) Lithium Tetrafluoroborate: A Mild and Efficient Reagent for the Cleavage of Dimethoxytrityl Ethers, Synthetic Communications: An International Journal for Rapid Communication of Synthetic Organic Chemistry, 29:19, 3421-3423, DOI: 10.1080/00397919908085970

To link to this article: <u>http://dx.doi.org/10.1080/00397919908085970</u>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at http://www.tandfonline.com/page/terms-and-conditions

LITHIUM TETRAFLUOROBORATE: A MILD AND EFFICIENT REAGENT FOR THE CLEAVAGE OF DIMETHOXYTRITYL ETHERS

Anqi Chen', Yong Zheng and Xinfeng Zhou

Department of Chemistry, Xiamen University, Xiamen, Fujian 361005, P. R. China

Abstract: A mild and efficient method for the cleavage of dimethoxytrityl ethers using lithium tetrafluoroborate is reported.

4, 4'-Dimethoxytrityl (DMTr) is widely used for the protection of primary hydroxy group, particularly in nucleotide chemistry¹. Organic protic acids and Lewis acids are the commonly used reagents for the cleavage of DMTr ethers². Herein we wish to report a novel and efficient method for the deprotection of DMTr ethers using lithium tetrafluoroborate.

We have found that in the presence of methanol, $LiBF_4$ is a mild and highly efficient reagent for the cleavage of DMTr ethers. The reaction is fast (< 15 min) and gives excellent yields of the alcohols (**Table**). Functional groups such as TBS, isopropylidene, ester, epoxide were not effected, and cleavage of the

^{&#}x27; To whom correspondence should be addressed.

Entry	Substrate	Product ^{b, c}	Yield (%) ^d
1	CH ₃ (CH ₂) ₇ ODMTr	CH ₃ (CH ₂) ₇ OH	94
2	TBSO(CH ₂) ₁₀ ODMTr	TBSO(CH ₂) ₁₀ OH	90
3	AcO(CH ₂) ₁₀ ODMTr	AcO(CH ₂) ₁₀ OH	90
4	O ODMTr	ОДОН	92
5		о он	94
6	DMTrO HO OAc O	HO HO OAc	90
7	DMTro O O O TBS	HO O O O TBS	86

Table Results of deprotection of DMTr ethers^a

a: All reactions were carried out on a 1.0 mmol scale.b: DMTrOMe was also isolated.c: All Products gave satisfactory spectroscopic data. d: Isolated yields after column chromatography.

nucleotide bond² and reverse tritylation³ were not observed. Replace of $LiBF_4$ with lithium chloride or bromide did not effect the detritylation.

Typical procedure: To a solution of DMTr ether (1.0 mmol) in 10% methanol in dichloromethane (v/v, 10 ml) was added a solution of lithium

LITHIUM TETRAFLUOROBORATE

tetrafluoroborate in acetonitrile (1.1 ml of a 1.0 M solution, 1.1 mmol) at ambient temperature. The reaction mixture was stirred for ca 15 min. Conventional work-up and purification by column chromatography on silica gel afforded DMTr methyl ether and the alcohol.

Acknowledgements: We are grateful to the National Science Foundation of China (NSFC) for financial support (Grant No: 29772028). A Research Fund from The Royal Society of Chemistry is also greatly acknowledged.

References and notes:

- Kohli, V.; Blöcker, H. and Köster, H., *Tetrahedron Lett.*, 1980, 21, 2683 and references cited therein.
- Habus, I. and Agrawal, S., Nucleic Acids Research, 1994, 22, 4350 and references cited therein.
- Ravikumar, V. T.; A. Krotz, H. and Cole, D. L., *Tetrahedron Lett.*, 1995, 36, 6587.

accepted 02-11-99