

This article was downloaded by:

On: 27 January 2011

Access details: *Access Details: Free Access*

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



Nucleosides, Nucleotides and Nucleic Acids

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713597286>

A Rapid Deprotection Procedure for Phosphotriester DNA Synthesis

T. P. Patel^a; M. A. Chauncey^a; T. A. Millican^a; M. A. W. Eaton^a

^a Chemistry Department, Gelltech Limited, Berks, UK

To cite this Article Patel, T. P. , Chauncey, M. A. , Millican, T. A. and Eaton, M. A. W.(1985) 'A Rapid Deprotection Procedure for Phosphotriester DNA Synthesis', *Nucleosides, Nucleotides and Nucleic Acids*, 4: 1, 305

To link to this Article: DOI: 10.1080/07328318508077901

URL: <http://dx.doi.org/10.1080/07328318508077901>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

A RAPID DEPROTECTION PROCEDURE FOR PHOSPHOTRIESTER DNA SYNTHESIS

T.P. Patel, M.A. Chauncey, T.A. Millican and M.A.W. Eaton
Chemistry Department, Celltech Limited, 250 Bath Road, Slough, Berks. UK.

Summary. An equimolar solution of aldoxime and tetramethylguanidine at 70°C cleaves all base labile protecting groups from oligonucleotides.

The synthesis of DNA using the solid phase phosphotriester method has been extensively researched in recent years, particularly to improve the rate of synthesis. However, relatively few studies have been carried out to investigate the rates of deprotection.

We have found that an equimolar solution of aldoxime and tetramethylguanidine at 70°C (0.3M solution 10ml, 50-150mgs of resin), for 12 to 17 hours, cleaves the 3'-succinyl group attaching the oligonucleotide to the support; cleaves the chlorophenyl protecting groups on the phosphorous, removes the base protection and also reverses the base modification. Reverse phase HPLC studies have shown that all four deprotected nucleosides showed no evidence of modification nor was any deamination of cytidine apparent after a 24 hour reaction.

The ion exchange HPLC profiles of an oligonucleotide deprotected by the rapid method followed by an acid treatment to remove the 5'-protecting group and by a standard method using ammonia showed no significant differences; neither was any difference seen using the mobility shift method of analysis. The oligonucleotides produced by this method have been found to be active in a range of biochemical experiments.

In conclusion therefore this deprotection procedure offers a simpler and faster method which can be incorporated easily into the cycle of an automated DNA synthesiser.