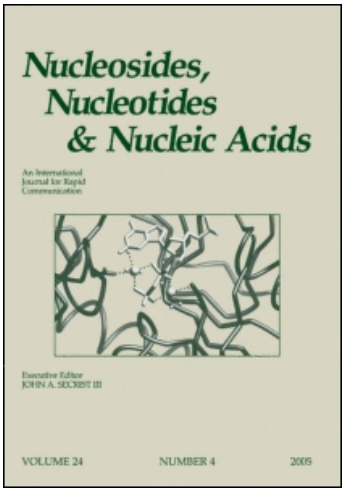

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p-Nitrophenylethyl-Phosphoramidites

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p-NITROPHENYLETHYL-PHOSPHORAMIDITES

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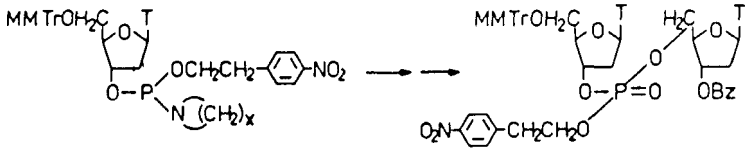
Summary: The use of thymidine-3'-p-nitrophenylethyl-phosphoramidites in solution syntheses affords high yields, even when applying the active component in low excess.

The Caruthers approach for the solid support synthesis of oligodeoxynucleotides recommends the use of methyl-N,N-dimethylamino-[1], methyl-N-morpholino- and methyl-N,N-diisopropylphosphoramidites[2] of the common deoxynucleosides as monomeric building blocks. Recently we found that the p-nitrophenylethyl-N-morpholino-phosphoramidites[3] of the common deoxynucleosides show so far the most promising feature to be used in solution chemistry to form oligomers in high condensation yields. These results can even be improved by use of thymidine-3'-p-nitrophenylethyl-phosphoramidites of the 7-, 9- and 13-membered cyclic amines giving rise to almost quantitative condensation yields during solution synthesis of the protected thymidine dimers.

The synthesis of the various phosphoramidites starts with the preparation of the corresponding N-trimethylsilylamines. Dropwise addition under N_2 to p-nitrophenylethoxy-dichlorophosphine in a 1:1 mole ratio gave the corresponding chloro-p-nitrophenylethyl-phosphoramidites, which could however not be distilled without decomposition but were ^{31}P-NMR spectroscopically pure simply after high vacuum evaporation of all volatile components. Reaction with 5'-O-monomethoxytrityl-



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thymidine according to known procedures[2] resulted in the formation of thymidine-3'-phosphoramidites, which can be purified chromatographically and concentrated to amorphous solids used in further syntheses. Condensation of 3'-O-benzoylthymidine with these thymidine-3'-phosphoramidites were initiated with 1H-tetrazole in acetonitrile. When performing this reaction in about 1:1.4 mole ratio, the fully protected thymidine dimer could be isolated after oxidation in yields ranging up to 93 % indicating that the condensation step must have been nearly quantitative. Therefore we believe these components to be rather useful synthons in large scale synthesis of oligodeoxynucleotides.

REFERENCES

1. Beaucage, S.L.; Caruthers, M.H.: Tetrahedron Lett. 1981, 1859.
2. McBride, L.J.; Caruthers, M.H.: Tetrahedron Lett. 1983, 245.
3. Beiter, A.H.; Pfleiderer, W.: Tetrahedron Lett. 1984, 1975.