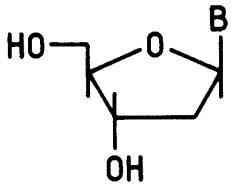
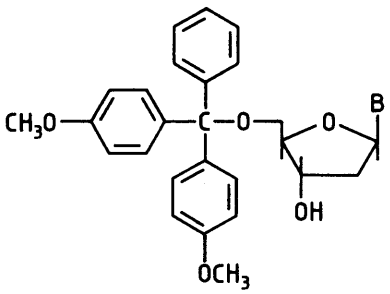
Protected Deoxynucleosides





B

anC_d	N^4-anisoylcytosine	$[(MeO)_2Tr]anC_d$
bzA_d	N^6-benzoyladenine	$[(MeO)_2Tr]bzA_d$
bzC_d	N^4-benzoylcytosine	$[(MeO)_2Tr]bzC_d$
ibG_d	N^2-isobutyroylguanine	$[(MeO)_2Tr]ibG_d$
T_d	thymine	$[(MeO)_2Tr]T_d$

The chemical synthesis of oligodeoxynucleotides has become an essential technique for molecular biology, especially genetic engineering[1-3]. The phosphotriester method is now widely used in oligodeoxynucleotide synthesis[4,5]. The protected nucleosides are phosphorylated at the free 3'-OH and – after removal of one phosphate protecting group – condensed with the 5'-OH of another suitably protected nucleoside in the presence of an arylsulfonyl azolide as coupling reagent. The most suitable nucleoside protecting groups have proved to be 4,4'-dimethoxytrityl for the 5'-OH[6] and benzoyl, isobutyryl or anisoyl for the primary amino groups of the purine and pyrimidine bases. The 4,4'-dimethoxytrityl group can be split off under mild conditions with benzenesulfonic acid in chloroform[5,7,8], toluenesulfonic acid in methylene chloride-methanol[9], trichloroacetic acid[10], trifluoroacetic acid[11], 80% acetic acid[12] or preferably with zinc bromide in wet nitromethane[12,14,17,18](giving less depurination). The benzoyl, anisoyl and isobutyryl protecting groups are removed with a base[12]. The anisoyl protected cytosine is about 100% more stable than the benzoyl protected nucleoside[15]. The benzoyl and anisoyl protecting groups are also selectively split off by ethylenediamine-phenol[16]. In the phosphite triester and phosphoroamidite methods of oligodeoxynucleotide synthesis the same protected nucleosides are used as in the phosphotriester-method[17-21]. Phosphites react faster than phosphates and are thus especially suited for solid phase synthesis[17-20,22]. Reagents for oligonucleotide synthesis, such as phosphorylating agents, arylsulfonyl azolides as coupling agents, etc. are also available from FLUKA. See our list in catalogue 14, page 47.

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10535	**N^4-Anisoyl-2'-deoxycytidine anC_d purum** $C_{17}H_{19}N_3O_6$ M_r 361.35 [48212-99-3]	100 mg	sFr. 50.–
10538	**N^4-Anisoyl-5'-O-(4,4'-dimethoxytrityl)-2'-deoxycytidine $[(MeO)_2Tr]anC_d$ purum** $C_{38}H_{37}N_3O_8$ M_r 663.73 [68892-40-0]	100 mg	sFr. 60.–
12954	**N^6-Benzoyl-2'-deoxyadenosine bzA_d purum** $C_{17}H_{17}N_5O_4$ M_r 355.35 [4546-72-9]	250 mg 1 g	sFr. 67.– sFr. 200.–
12956	**N^4-Benzoyl-2'-deoxycytidine bzC_d purum** $C_{16}H_{17}N_3O_5$ M_r 331.33 [4836-13-9]	250 mg 1 g	sFr. 67.– sFr. 200.–
12958	**N^6-Benzoyl-5'-O-(4,4'-dimethoxytrityl)-2'-deoxyadenosine $[(MeO)_2Tr]bzA_d$ purum** $C_{38}H_{35}N_5O_6$ M_r 657.73 [64325-78-6]	250 mg 1 g	sFr. 55.– sFr. 145.–
12960	**N^4-Benzoyl-5'-O-(4,4'-dimethoxytrityl)-2'-deoxycytidine $[(MeO)_2Tr]bzC_d$ purum** $C_{37}H_{35}N_3O_7$ M_r 633.70 [67219-55-0]	250 mg 1 g	sFr. 55.– sFr. 145.–
38824	**5'-O-(4,4'-Dimethoxytrityl)thymidine $[(MeO)_2Tr]T_d$ purum** $C_{31}H_{32}N_2O_7$ M_r 544.60 [40615-39-2]	250 mg 1 g	sFr. 33.– sFr. 95.–
58691	**N^2-Isobutyroyl-2'-deoxyguanosine ibG_d purum** $C_{14}H_{19}N_5O_5$ M_r 337.34 [68892-42-2]	250 mg 1 g	sFr. 85.– sFr. 255.–
58692	**N^2-Isobutyroyl-5'-O-(4,4'-dimethoxytrityl)-2'-deoxyguanosine $[(MeO)_2Tr]ibG_d$ purum** $C_{35}H_{37}N_5O_7$ M_r 639.71 [68892-41-1]	250 mg 1 g	sFr. 63.– sFr. 175.–
89270	**Thymidine T_d puriss.** $C_{10}H_{14}N_2O_5$ M_r 242.23 [50-89-5]	1 g 5 g	sFr. 12.– sFr. 50.–

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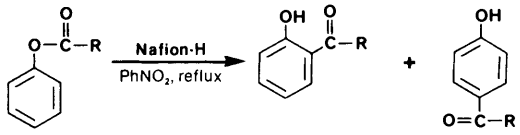
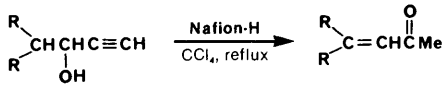
Fries rearrangement of aryl esters[1]



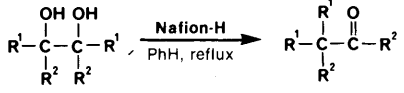
63-75%

Rupe rearrangement of α-ethynyl alcohols to α,β-unsaturated carbonyl compounds[2]



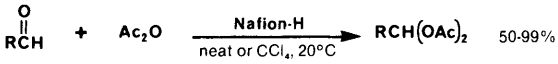
60-88%

Pinacol rearrangement[3]



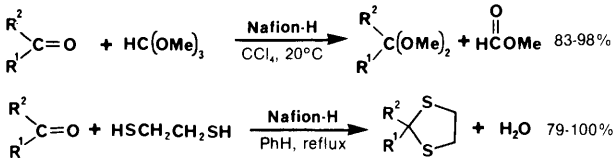
82-92%

Preparation of gem-diacetates from the corresponding aldehydes[4]



50-99%

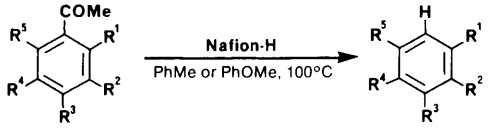
Synthesis of dimethyl acetals and ethylene dithioacetals[5]



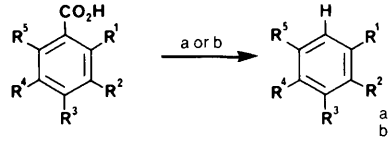
83-98%

79-100%

Deacetylation and decarboxylation of aromatics[6]



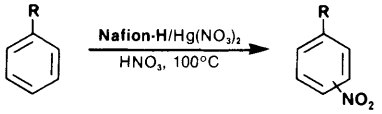
56-99%



5-80%

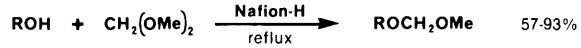
a = **Nafion-H**, PhMe, 100°C
b = **Nafion-H**, PhOMe, 150°C

Aromatic nitration[7]



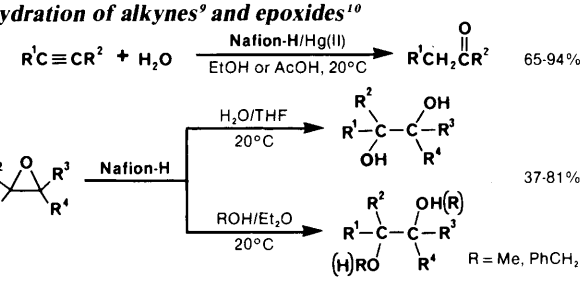
48-77%

Facile preparation of methoxymethyl ethers[8]



57-93%

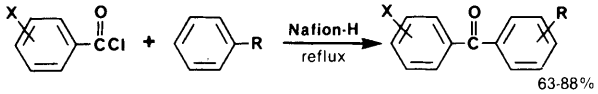
Hydration of alkynes[9] ***and epoxides***[10]



65-94%

37-81%

Friedel-Crafts acylation of benzene and substituted benzenes[11]



63-88%

Nafion-H has also been shown to catalyze aromatic alkylations,[12,13] Diels-Alder reactions,[14] sequential aldol condensation/hydrogenation of ketones,[15] photochemical ring contraction,[16] esterification of carboxylic acids,[17] and preparation of cyclic ethers from the corresponding diols.[18]

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