

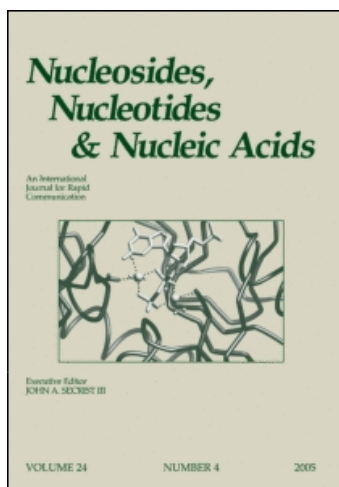
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Synthesis of an Alanyl Adenosine Analog

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SYNTHESIS OF AN ALANYL ADENOSINE ANALOG

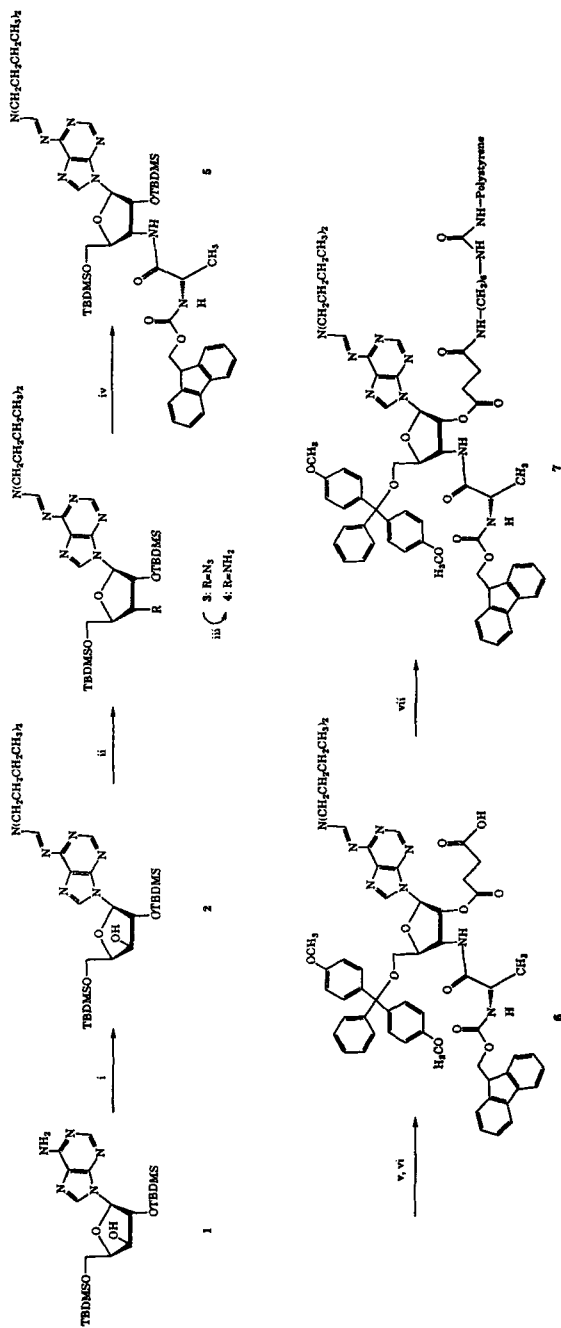
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ABSTRACT: The synthetic route towards a 3'-alanyl-3'-amino-3'-deoxyadenosine derivative is described which allows the automated synthesis of 3'-aminoacylated RNA strands.

The 3'-end of tRNA consists of an invariant C-C-A-single strand which is conserved in all tRNA molecules. This sequence has a highly ordered structure due to base stacking of the nucleotides, but is thought to be also very flexible towards different partners in the translation apparatus (e.g. elongation factor Tu). It is suggested that specific recognition occurs through contacts of this aminoacylated nucleotide.¹ In order to by-pass lability and isomerization problems with the adenosine-aminoacylate ester bond in the structure elucidation process of aminoacylated RNA, an isosteric adenosine analog, 3'-amino-3'-deoxyadenosine, can be used. Here, we describe the synthesis of N^{3'}-aminoacyl-3'-amino-3'-deoxyadenosine derivative **6** starting from adenosine (Scheme).²⁻⁸

In order to test the compatibility of the concept with the conditions of automated oligonucleotide synthesis, we synthesized an 3'-alanylated 22mer which contained the first six basepairs (bp) of the aminoacyl arm of *E. coli* alanyl-tRNA^{Ala} closed by a CUUCGG loop sequence, using **7** as the anchor on the solid support.



TBDMS: *tert*-butyldimethylsilyl; Tr: trifluoromethylsulfonyl; DMAP: 4-dimethylaminopyridine; CBMIT:

1,1'-carbonylbis(3-methylimidazolium) triflate; DMTr: 4,4'-dimethoxytrityl; HMDIC: hexamethyldiisocyanate; RT: room temperature, on: overnight

SCHEME

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