

THE USE OF 2,3'-ANHYDRO NUCLEOSIDES IN THE SYNTHESIS
OF THE INTERNUCLEOTIDE BOND

K.L.Agarwal and M.M.Dhar

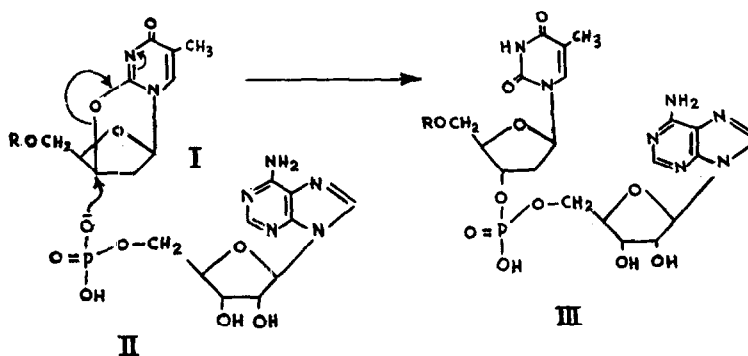
Central Drug Research Institute,
Lucknow, India.

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Two recent reports^{1,2} on the synthesis of the internucleotide phosphodiester bond by the reaction of uridine-3'-phosphate with the 2,5'-anhydro nucleoside, 2',3'-isopropylidene- α -D-2,5'-cylouridine has prompted us to report a synthesis of the 3'-5' internucleotide bond by the action of a nucleoside-5'-phosphate anion on a 2,3'-anhydro nucleoside, in reasonable yields.

Our procedure is illustrated by the synthesis of thymidyl adenosine (III, R = H). 5'- α -Trityl-2,3'-anhydrothymidine³ (I, R = trityl) was refluxed with 1.5 equivalents of tri-n-butyl ammonium 5'-adenylate (II) in dimethyl formamide for 12 hours. Removal of solvent, followed by preparative paper chromatography [Whatman 3 MM paper, solvent: n-butanol-acetic acid-water (4:1:5)] yielded a major product (R_f , 0.54), which on detritylation with 80% acetic acid gave a homogeneous product that analysed correctly for thymidyl adenosine. This product yielded thymine and

adenine in equivalent amounts when hydrolysed with formic acid and thymidine and adenosine-5'-phosphate on hydrolysis with snake venom diesterase. The yield of thymidyl adenosine was 44%.



REFERENCES

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