

Nucleosides and Nucleotides

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Synthesis of (\pm)-cis-3-Aminomethyl-1-indanylmethanol as a Precursor of Carbocyclic Analogues of Nucleosides

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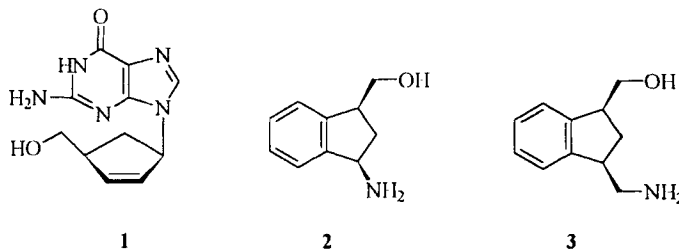
SYNTHESIS OF (\pm)-*cis*-3-AMINOMETHYL-1-INDANYLMETHANOL AS A PRECURSOR OF CARBOCYCLIC ANALOGUES OF NUCLEOSIDES.

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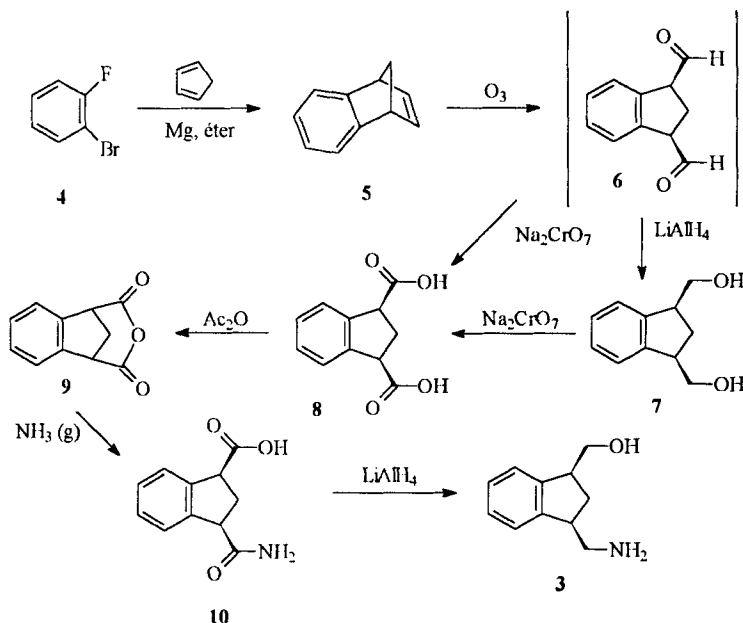
ABSTRACT: Aminoalcohol precursor of carbocyclic analogues of nucleosides (\pm)-*cis*-3-aminomethyl-1-indanylmethanol was efficiently synthesized starting from benzonorbornadiene (**5**) previously prepared by addition of cyclopentadiene to 1-bromo-2-fluorobenzene.

In the search for new antitumor and antiviral therapeutic agents, much recent attention has been focused on carbocyclic analogues of nucleosides¹ (CANs). The potent antiviral properties of carbovir² (**1**) prompted us to examine the effect of the structural and configurational features of the aminoalcohol moiety on the antiviral activity of CANs.

Synthesis of CANs generally involves construction of the purine or pyrimidine base about the amino group of an appropriate aminoalcohol. This linear strategy allows preparation of large numbers of congeneric CANs that can be screened for biological activity. Recently we reported preparation of aminoalcohol **2**³, a precursor incorporating an indan instead of a cyclopentene ring, and we now describe the preparation of its higher homologue **3**, in which a methylene spacer increases the distance between the five membered ring and the site of base construction.



Aminoalcohol **3** was prepared from benzonorbornadiene (**5**), which was obtained in 66% yield from 1-bromo-2-fluorobenzene (**4**) by a modification of the original Wittig method⁴: ethyl ether replaced THF as solvent and initiation of the reaction was induced by ultrasound. Ozonolysis⁵ of (**5**) provided dialdehyde (**6**), which was reduced with LiAlH_4 to obtain diol (**7**) (74%). $\text{Na}_2\text{Cr}_2\text{O}_7$ oxidation of both **6** and **7** afforded diacid (**8**), in 84% and 77% yields respectively, and treatment of **8** with acetic anhydride gave anhydride (**9**), which was opened with ammonia to afford amidoacid (**10**). Reduction of **10** with LiAlH_4 finally gave aminoalcohol **3** in 93% yield.



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