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STUDIES ON THE SYNTHESIS OF AMINO SUGARS FROM DIHYDROPYRIDINES

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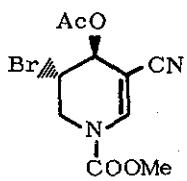
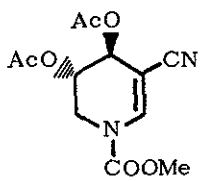
Recently, we reported the formation and application of various kinds of dihydroheteroaromatic compounds, prepared ionically and photochemically from heteroaromatic amines. As an extension of our work, an aminopentose derivative has been synthesized by polyhydroxylation of two double bonds in a 1,6-dihydropyridine derivative.

1-Carbomethoxy-3-cyano-1,6-dihydropyridine was treated with N-bromosuccinimide in acetic acid to form trans-bromoacetate I. The acetoxylation of I with silver acetate in an acetic acid-benzene solvent system mainly resulted in the formation of trans diacetate II. The tetraacetate III was produced, when this crude trans diacetate II was oxidized with osmium tetroxide in benzene-pyridine solution followed by hydrogen sulfide treatment and subsequent acetylation. Successive treatment of III with sodium borohydride followed by acetylation completed the synthesis of 5-carbomethoxyamino-5-deoxy-DL-xylopiperidinose tetraacetate.



(I)



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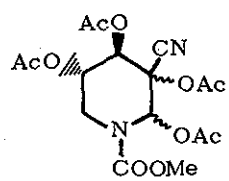

(III)