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Author	龍田, 邦明(Tatsuta, Kuniaki)
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Studies on the Configurations of Aminosugar Glucosides and Related Compounds

Kuniaki TATSUTA*

The absolute configurations of kanamycin and related compounds have been determined by copper complex method.

The absolute configuration of kanamycin was recently proposed by Rinehart, *et al.* and Tatsuoka, *et al.*.

In the present paper, the copper complex method using tetrammin-cupric sulfate (TA-Cu) has been employed, in addition to Cupra B, to establish the absolute configurations of aminosugar glucosides and related compounds. The application of the above reagents to methyl α-and β-D-glucosaminide and their N-acetyl derivatives. etc., lead to the conclusion that Cupra B is possible to form complex with vicinal-glycol and vicinal-aminoalcohol and that the TA-Cu reagent forms complex only with the latter.

The N-acetyl derivative of O-(3-amino-3-deoxy-α-D-glucopyranosyl)-deoxystreptamine was methylated with methyl iodide and silver oxide and followed by hydrolysis with 3 N hydrochloric acid. The hydrolyzate was chromatographed over cellulose powder using a solvent system of n-butanol-pyridine water-acetic acid (6 : 4 : 3 : 1, v/v) to give O, O'-dimethyl-N, N'-dimethyl-deoxystreptamine, m. p. 228°~231°C (decomp.), $[\alpha]_{436}^{12}$+30.6° (c 0.3, in water). The optical rotation of the compound in a Cupra B and TA-Cu solution showed strong dextrorotations, $\Delta[M]_{436}^{12}$+1600° and +1200°, respectively, as expected. It has been, therefore, concluded that 3-amino 3-deoxy-α-D-glucose moiety of kanamycin is linked to C-6 position of deoxystreptamine in agreement with the absolute configuration proposed by the above mentioned authors.

The author has successfully applied the empirical rule of Reeves to aminoalcohols by using TA-Cu.

*龍 田 邦 明