NOTES

A FACILE PREPARATION OF ERYTHRONOLIDE A OXIME

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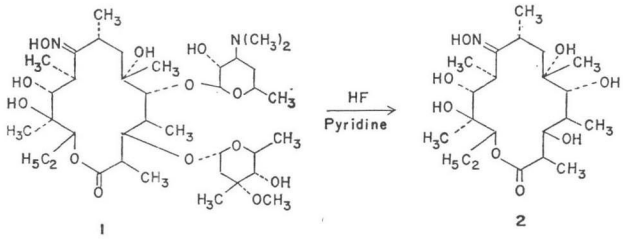
(Received for publication May 19, 1975)

We recently reported the preparation of erythronolide A oxime and the regeneration of the 9-ketone to provide erythronolide A.[1] The somewhat lengthy sequence described in that preparation was necessitated by the stability to acid cleavage of the amino sugar, desosamine. It was necessary to first remove the dimethylamine group of the desosamine moiety to give a neutral sugar which was then smoothly cleaved by mild acid treatment.

We now wish to report that treatment of erythromycin A oxime (**1**) with 70% hydrogen fluoride-pyridine results in cleavage of both the cladinosyloxy and desosaminyloxy linkages to provide a 38% yield of erythronolide A oxime (**2**) in one step. The mass spectrum of **2** exhibited the molecular ion peak at *m/e* 433 and the nmr and ir spectra were identical to those of authentic **2**.[1]

This glycoside cleavage reaction may find applicability to other substrates containing amino sugars.



1 2

Experimental

To 1.00 g of erythromycin A oxime (**1**) in a polyethylene Erlenmeyer flask was added 20 ml of 70 % hydrogen fluoride-pyridine (Cationics Inc.). The solution was stirred at room temperature for 30 minutes and then poured slowly into 1 liter of saturated sodium bicarbonate solution. The product was extracted with chloroform and the extract was dried ($MgSO_4$) and concentrated *in vacuo* to yield a red oil. Trituration with ether gave a solid (0.30 g) which was crystallized from acetone-hexane to provide 0.22 g (38 % yield) of pure erythronolide A oxime (**2**): mp 235~239°C. The mass spectrum exhibited a molecular ion peak at *m/e* 433 and an identical fragmentation pattern to authentic **2**.[1] A mixed melting point with authentic **2**[1] showed no depression.

References

1) LEMAHIEU, R. A.; M. CARSON & R. W. KIERSTEAD: Glycoside cleavage reactions on erythromycin A. Preparation of erythronolide A. J. Med. Chem. 17: 953~956, 1974