STRUCTURE AND REACTIONS OF REDUCTIOMYCIN

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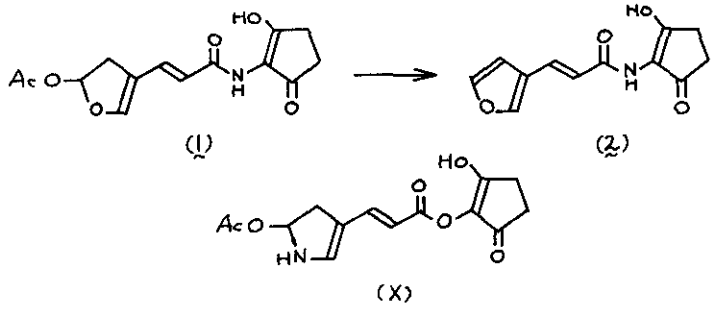
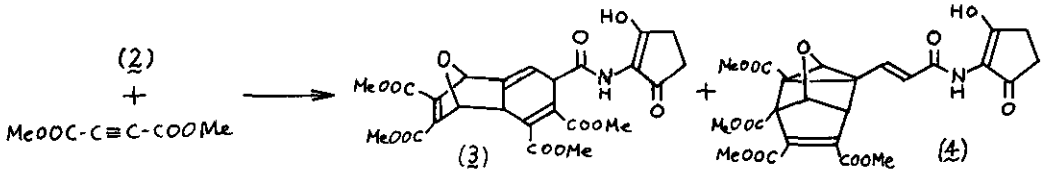
Reductiomycin (1), mp 215° (dec.) was an acidic, water insoluble antibiotic produced by a variant of Streptomyces orientalis. The antibiotic showed potent antitumor activity, weak antibacterial activity, and weak antifungal activity.

The structure of reductiomycin (1) was determined on the basis of chemical degradation studies in conjugation with spectroscopic analysis, and further confirmed by the synthesis of the furan derivative (2), obtained from the antibiotic on heating by the elimination of one mole of acetic acid.

Recently, the structure of reductiomycin was reported to be (X) based on X-ray crystallography[1]. Since the physical, spectral, and chromatographic properties of the antibiotic (1) was identical with those of reductiomycin, the structure of reductiomycin must therefore be revised and represented by the formula (1).

The reaction of the furan derivative (2) with diethyl acetylenedicarboxylate gave two 1:2 adducts (3) and (4), the ratio of two adducts being dependent on the conditions employed: the former (3) was the predominant adduct after a short period of reaction times, while the two adducts were formed in almost equal amounts after long reaction times.





[1] N. Hirayama, K. Shimizu, K. Shirahata, K. Ueno, and G. Tamura, Agr. Biol. Chem., 44, 2083 (1980).