PRODUCTION OF MITOMYCIN C AND PORFIROMYCIN BY *STREPTOMYCES* SPECIES[1]

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Mitomycin C, currently in clinical use as an antitumor agent (1), and porfiromycin, its *N*-methyl derivative (2), have been isolated from *Streptomyces purpurascens* Lindenbein, a new *Streptomyces* strain isolated in our laboratory from a soil sample (3).

Mitomycin C and porfiromycin were obtained in the culture filtrate of batch fermentations while shake flask experiments did not yield these compounds (4).

EXPERIMENTAL

GENERAL EXPERIMENTAL PROCEDURES.—Spectra were recorded with the following instruments: uv, Perkin-Elmer 40; ^{1}H nmr, Varian 80 MHz; ms, JEOL JMS D-300; ir, Perkin-Elmer 157; adsorbents for tlc and cc were from BDH.

PRODUCTION OF ANTIBIOTICS.—*Fermentation medium* (common to both shake flasks and fermentor): glycerol, 1.9%; soybean meal, 1%; $(NH_4)_2PO_4$, 0.05%; $MgSO_4$, 0.05%; K_2HPO_4, 0.1%; $CaCO_3$, 0.3%; and NaCl 0.3%. Tap H_2O was added to 100 ml, pH 7.2-7.3, after sterilization.

Fermentation parameters: Fermentor—volume charged, 50 liter; rpm, 200; fermentation time (h), 24; antifoam (silicone-H_2O, 1:1), 75 ml; aeration, ¼ liter/liter; temperature, 29°±1°; pH, 7.2-7.3; yield (crude antibiotic), 80 mg/liter; mitomycin C, 0.02 mg/liter; porfiromycin, 0.03 mg/liter.

Shake flasks—volume, 200 ml each Erlenmeyer flask; rpm, 200; fermentation time (h), 46; antifoam, none added; aeration, none; temperature, 29°±1°; pH, 7.2-7.3; yield (crude antibiotic), 120 mg/liter; mitomycin C and porfiromycin, none.

Extraction and isolation: The crude antibiotic (fermentation batch) obtained from $CHCl_3$ extracts of the culture filtrate on chromatography over silica gel column and elution with $CHCl_3$-MeOH (9:1) gave a mixture of four compounds. The mixture on further preparative tlc ($CHCl_3$-MeOH, 9:1) afforded two compounds that were identified as mitomycin C and porfiromycin by mp, ^{1}H nmr, ms, uv, and comparison with authentic samples. These two antibiotics were not obtained from the crude antibiotic complex isolated from shake flasks.

The full details of isolation and identification of these compounds are available on request to the senior author.

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