ISOLATION OF AN ANTIBIOTIC AB-74, RELATED TO DESTOMYCIN C

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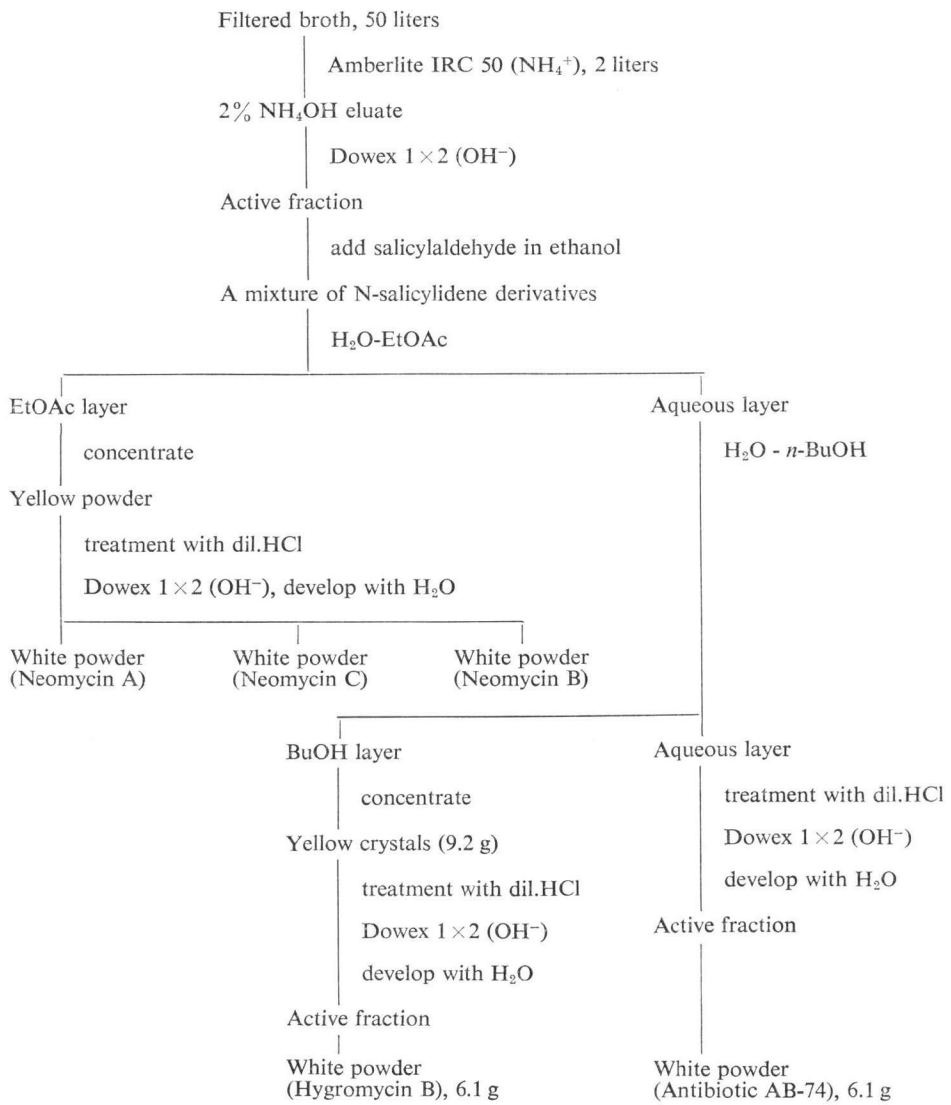
During the course of screening for new antibiotics, we found that a new *Streptomyces*, *S. aquacanus* A-14317,[1] produced five water-soluble basic antibiotics. On the basis of physicochemical and biological properties, four of them were identified with neomycins A, B, C and hygromycin B. Another antibiotic designated tentatively AB-74 was found to be related to destomycin C.[2]

When the producing strain (A-14317) was submerge-cultured in a medium composed of 3% soluble starch, 2% glucose, 1% defatted soybean meal, 0.5% meat extract, 0.5% Polypeptone, 0.3% NaCl, 0.3% $CaCO_3$, 0.2% soybean oil and silicon (30 ml/50 liters), maximum activities against *Staphylococcus aureus* and *Escherichia coli* were attained after 94 hours.

Antibiotic AB-74 was isolated from the culture filtrate by absorption on Amberlite IRC 50 and

Chart 1. Procedure of isolation of antibiotic AB-74.



via SCHIFF base formation (see Chart 1).

Antibiotic AB-74 was colorless powder, m.p. 164~175°C, $C_{21}H_{39}N_3O_{13}\cdot 1/2H_2O$, $[\alpha]_D+18.4°$ (*c* 1, H_2O) which afforded destomic acid, D-talose and N,N′-dimethyl-2-deoxystreptamine on acid hydrolysis. Although the ^1H- and ^{13}C-NMR spectra of AB-74 showed a little difference from those of destomycin C, $[\alpha]_D+9°$ (*c* 1, H_2O), on direct comparisons, other properties of AB-74 were similar to those of destomycin C except the optical rotation. From the data now available, it seems reasonable to assume that AB-74 is an antibiotic related to destomycin C. Identity or not-identity of these two antibiotics needs further investigation.

The antimicrobial spectrum of AB-74 was very similar to that of hygromycin B. The acute toxicity (LD_{50}) of AB-74 in mice was 11.1 mg/kg (i.v.) and 280 mg/kg (p.o.).

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References

1) TAMURA, A.; R. FURUTA & H. KOTANI: Taxonomic studies on *Streptomyces aquacanus*, antibiotic AB-74-producing organism. J. Antibiotics 29: 592~594, 1976
2) SHIMURA, M.; Y. SEKIZAWA, K. IINUMA, H. NAGANAWA & S. KONDO: Destomycin C, a new member of destomycin family antibiotics. J. Antibiotics 28: 83~84, 1975