TWO POLYKETIDES, ANTHRACOBIC ACIDS A AND B, PRODUCED BY AN ENDOPHYTIC FUNGUS ANTHRACOBIA SP.

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Endophytic fungi reside in the intercellular space of living plant tissues without causing discernible symptoms of plant disease. These microorganisms have recently been recognized as rich and untapped resource of structurally novel and biologically active secondary metabolites.

We have recently started a research program to discover the antimicrobial agents from the secondary metabolites from endophytic fungi and collected over 200 fungal strains inhabiting the twigs and petiols in the northeast of Japan (1, 2). As a part of our continuing search for bioactive compounds from this fungus, we have isolated two new antimicrobial antibiotic, anthracobic acids A (1) and B (2), in the culture of an endophytic fungus, Anthracobia sp.

The molecular formula of 1 and 2 were identical, C25H32O4 established by HR-FABMS. Structures of the new natural polyketides 1 and 2 obtained were determined mainly by the use of spectroscopic methods especially by detailed analyses of their ¹H and ¹³C-NMR spectra with aid of 2D-NMR spectroscopy including HMQC and HMBC techniques. In each compounds, the conjugated olefin is attached to an octahydronaphthalene ring.

The relative configuration of 1 was elucidated by analysis of ¹H-¹H coupling constants, and the results of NOE difference experiments. These data indicated that 1 contained a trans junction of the octahydronaphthalene ring and all trans tetraene. From the NOESY correlations, 2 was determined to be the (Z)-isomer of 1 at the C(6) = C(7) bond. Both compounds showed antimicrobial activity, while 1 also showed weak antitumor activity.