Aeruginosin B—A Synthesis

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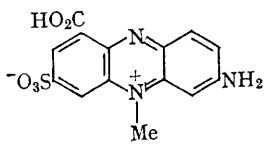
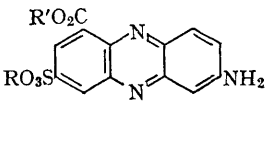
ON the basis of spectral data and comparison with model compounds in respect of a reaction with hydrochloric acid, structure (I) was proposed for aeruginosin B, a red crystalline pigment from *Pseudomonas aeruginosa*.[1] This structure has now been confirmed by synthesis of the demethylated pigment (II; R = R′ = H) and the pigment itself.



(I)



(II)

Cyclization of 4′,6-diamino-4-phenoxysulphonyldiphenylamine-2-carboxylic acid by refluxing in nitrobenzene gave (II; R = Ph, R′ = H). This was readily hydrolysed by alkali to the free sulphonic acid (II; R = R′ = H) which proved identical with demethylaeruginosin B.

Attempts to synthesize the pigment itself by this route were thwarted by our inability to quaternize (II; R = Ph, R′ = Me). We have tried various other approaches, the most marked success being by the reaction of aeruginosin A[2] [desulpho-(I)] with sodium sulphite in air-free aqueous buffer at pH 8·4. Even here, the yield of aeruginosin B is limited to 29%, a second sulphonic acid group being introduced almost as readily as the first; the extent of disubstitution was markedly affected by pH and by the presence of air.

Identities have been proved by paper chromatography and electrophoresis, acid hydrolysis patterns, ultraviolet/visible and infrared spectra and, in the case of the demethyl compounds, p.m.r. spectra.

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[1] R. B. Herbert and F. G. Holliman, *Proc. Chem. Soc.* 1964, 19.
[2] F. G. Holliman, *Chem. and Ind.*, 1957, 1668; *S. African Ind. Chemist*, 1961, **15**, 233.