Revised Structures for Cytochalasins E and F

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Summary The structures of cytochalasins E and, by analogy, F are revised to (**3**) and (**4**) respectively.

CYTOCHALASINS E and F have been assigned structures (**1**) and (**2**) respectively.[1] We now report evidence which requires modification of their structures to (**3**) and (**4**).

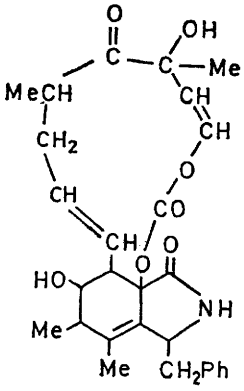
The ^{13}C-n.m.r. spectrum of cytochalasin E shows signals due to only thirteen sp^2 carbon atoms in the range δ (Me_4Si) 122—213 whereas structure (**1**) possesses fifteen such atoms. On the other hand the spectra of the isomeric compounds (**5**) and (**6**) formed by mild acid treatment of cytochalasin E[1] show the expected fifteen sp^2 carbon atoms, so that a new

double bond has been formed in the acid catalysed rearrangement and cytochalasin E must possess one more ring than structure (**1**).

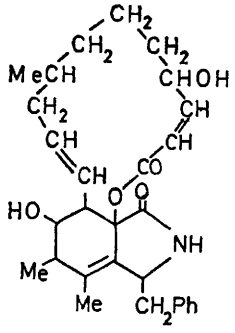
Ozonolysis of cytochalasin E and reduction of the ozonide with sodium borohydride[2] gave compound (**7**), whose structure was clear from its ^{1}H n.m.r. spectrum. In particular it shows the presence of only two hydroxy-protons and a doublet (J 5 Hz) at δ 2·68, a chemical shift characteristic of a proton on an epoxide ring.

Structure (**3**) for cytochalasin E readily accounts for the formation of the isomers (**5**) and (**6**), and is supported by the fact that cytochalasin E fails to form an acetate under conditions which readily acetylate the 7-hydroxy-group of cytochalasins A, B, C, and D. Structure (**4**) for cytochalasin F follows from the similarity of its ^{1}H n.m.r. spectrum to that of cytochalasin E,[1] its similar behaviour towards acid,[1] and the fact that it only forms a monoacetate.

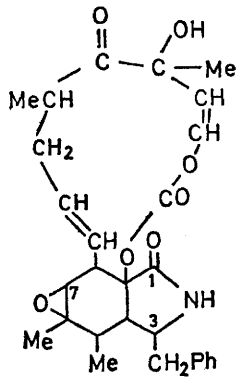
The earlier structures of cytochalasins E and F were based on the incorrect assignment of a signal at δ *ca.* 3·7 to H-7, which gives a signal of 3·85 in cytochalasins A and B.[3] This signal is in fact due to H-3, which appears at lower field in the spectra of cytochalasins E and F than in those of cytochalasins A, B, C, and D.



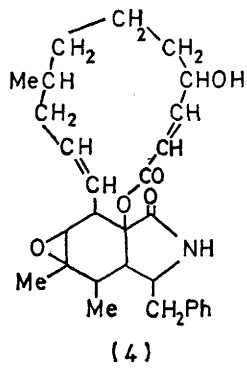
(1)



(2)



(3)



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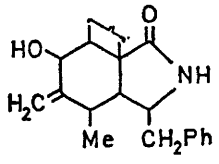

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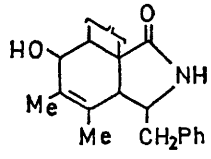

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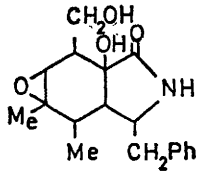

(7)

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[1] D. C. Aldridge, B. F. Burrows, and W. B. Turner, *J.C.S. Chem. Comm.*, 1972, 148.
[2] W. Rothweiler and Ch. Tamm, *Helv. Chim. Acta*, 1970, **53**, 696.
[3] D. C. Aldridge, J. J. Armstrong, R. N. Speake, and W. B. Turner, *J. Chem. Soc.* (*C*), 1967, 1667.