Table 1. Relative Activity of Inducible and Constitutive Hydrolases in Saprophytic and Phytopathogenic Fungi

	Inducible					Constitutive				
	am.	ar.	c.	g.	p.	am.	ar.	c.	g.	p.
Saprophytes	1·8	2·0	0·0	0·0	0·3	1·0	0·0	0·0	0·0	0·0
Phytopathogens	1·7	2·1	1·1	0·2	2·5	1·5	0·7	0·2	0·0	1·6
Rot-causing fungi	2·5	2·3	1·3	0·3	3·3	2·0	0·8	0·0	0·0	2·8
Fungi attacking Leguminosae	1·5	2·3	0·7	0·2	2·3	1·7	1·0	0·3	0·0	1·5

am., Amylase; ar., arabanase; c., cellulase; g., galactanase; p., polygalacturonase. Numbers indicate average relative activity (maximal activity found is indicated as 4·0).

(and not, for example, only an L-arabinose-containing heteroglycan). Acid hydrolysis of a 1 per cent solution of araban for 30 min at 60° C—conditions being unsuitable to hydrolyse pectins, cellulose, starch, etc.—appeared to yield L-arabinose as the only sugar component in a wide *p*H range (0·07–4·31). Therefore, it might be assumed that the commercial sample at least contained a homogeneous araban. An assay for galacturonic acid with carbazole[11] revealed the araban sample to contain 37 per cent of galacturonic acid-reacting material; obviously, also in the commercial sample the greater part of the araban still exists in the form of a pectin-araban complex.

The wide distribution of arabanases among phytopathogenic fungi may be considered to be an indication of their possible role in the process of infection. They are worth a more extensive investigation, especially in cases where high percentages of arabans are found in the cell walls.

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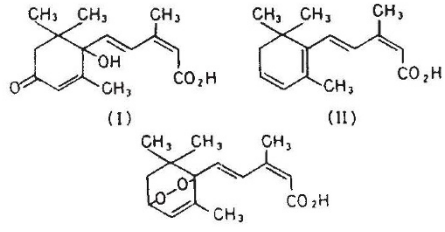
Synthesis of (±)-Abscisin II

We recently reported[1] that a growth-inhibitory substance ('dormin') from sycamore leaves is identical with abscisin II, an abscission-accelerating substance obtained from young cotton fruits. Addicott *et al.*[2] have proposed the structure (I) for abscisin II. We have now confirmed this structure by synthesis.

3 - Methyl - 5 - (2,6,6 - trimethylcyclohexa - 1,3 - dienyl) *cis-trans*-2,4-pentadienoic acid[3] (II) in benzene–ethanol was irradiated with visible light in an atmosphere of oxygen in the presence of eosin as a photosensitizer. The crystalline epidioxide (III) was formed readily. When this was heated at 100° C for 7·5 min in 0·07 N aqueous sodium hydroxide, rearrangement occurred and (±)-abscisin was isolated after acidification.



The synthetic substance is a racemic compound and its melting point (188°–190° C) is some 30° higher than that of the natural hormone. However, the ultra-violet, mass and infra-red spectra were identical with those of abscisin II, and the substance on bioassay[1] showed approximately one-half the inhibitory activity of the natural hormone. Abscisin II is presumably a single enantiomorph, although its optical activity has not yet been measured. Resolution of the racemic substance is in progress.

The all-*trans* isomer of abscisin II was synthesized in the same manner. On bioassay[1] it showed less than 1 per cent of the inhibitory activity of natural abscisin II. On the other hand, the epidioxide (III) showed approximately one-sixth of the activity of the natural hormone. This observation is a possible indication of the biosynthetic route.

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Estimation of Sphingomyelin

An investigation of marine phospholipids in this laboratory necessitated the determination of sphingomyelin. Sphingomyelin is frequently estimated by determining sphingosine according to the method of McKibbin and Taylor[1]. This method consists of the separation of sphingosine from other nitrogenous bases by extraction from an aqueous acid solution with chloroform; total nitrogen is determined in the chloroform extract. This procedure has been criticized by several workers, for example, Olley and Lovern[2], on the grounds that not all the chloroform-soluble nitrogen is in fact sphingosine-nitrogen. Modifications of the method have been suggested by Lovern[3] and Rhodes and Lea[4]; but substantially the original method is still commonly used in many laboratories[5–7].

The McKibbin and Taylor method proved unreliable in our laboratory, as is shown in Table 1, and was abandoned.

A new routine procedure for the estimation of sphingomyelin was later developed, by determining sphingomyelin-choline in the phospholipid mixture. This was found by determining the total choline in a phospholipid hydrolysate as described previously[8] and the relative proportions of lecithin-choline, sphingomyelin-choline and lysolecithin-choline. The latter were readily obtained by chromatography of the phospholipid mixture on silicic acid impregnated paper, followed by staining with the tricomplex stain of Hooghwinkel and van Niekerk[9]. After determining the average equivalent weight of the phospholipid fatty acids, the percentage sphingomyelin could be easily calculated from the sphingomyelin-choline figure. In addition, the quantities of lecithin and lysolecithin in the phospholipid mixture were obtained simultaneously. It is assumed in this procedure that the fatty acids are evenly distributed over the different phospho-

Table 1. Estimation of Sphingomyelin in Marine Phospholipids (As per cent of total phospholipids)

Source of phospholipid	McKibbin and Taylor's method[1]	Present method	Column chromatographic procedure[4]
Hake flesh	9·4	4·8	3·9
Hake liver	7·3	8·6	10·3
Rock lobster roe	2·2	4·8	2·0
Rock lobster hepatopancreas	9·4	1·4	1·0
Total pilchard	10·6	6·3	5·3