Table 1. PLANT GROWTH-REGULATING ACTIVITY OF OXIMES AND THEIR CORRESPONDING ACIDS IN THE WHEAT CYLINDER, PEA SEGMENT AND PEA CURVATURE TESTS

Compound	Wheat cylinder test				Pea segment test				Pea curvature test			
	10^{-7} M	10^{-6} M	10^{-5} M	10^{-4} M	10^{-7} M	10^{-6} M	10^{-5} M	10^{-4} M	10^{-7} M	10^{-6} M	10^{-5} M	10^{-4} M
3-Indolylacetaldoxime	98	105	137*	152*	100	110†	125*	127*	0	1	2	3
3-Indolealdoxime	98	98	98	99	99	100	101	99	0	0	0	0
2 : 4-Dichlorophenoxyacetaldoxime	103	114‡	150*	137*	101	104	108†	121*	0	0	1	3
2 : 3 : 6-Trichlorobenzaldoxime	100	98	110‡	120*	100	101	101	104	0	0	0	0
3-Indolylacetic acid	117*	139*	157*	160*	106†	121*	127*	130*	1	2	3	5
3-Indolecarboxylic acid	101	100	99	98	101	101	102	103	0	0	0	0
2 : 4-Dichlorophenoxyacetic acid	106	118*	153*	159*	105†	114*	124*	125*	1	4	6	6
2 : 3 : 6-Trichlorobenzoic acid	99	103	121*	150*	100	109†	124*	128*	0	1	4	5

Control measurements: wheat test 100; pea segment test 100; pea curvature test 0. For details of these tests see ref. 4.
Results in wheat cylinder and pea segment tests significantly different from water control: * at 0·1 per cent level; ‡ at 1 per cent level; † at 5 per cent level.

Furthermore, the chromogenic reactions with Ehrlich, Salkowski and nitric/nitrous acid reagents were identical to those obtained with IAA.

Similar results were also obtained when 2 : 4-dichlorophenoxy-acetaldoxime ($R_F = 0{\cdot}96$) was treated with wheat and pea tissue, the highly active acidic product being identified as 2 : 4-dichlorophenoxyacetic acid by bioassay and chromogenic reagents ($R_F = 0{\cdot}52$).

The above results therefore establish the conversion of these aldoximes to the corresponding carboxylic acids in wheat and pea tissue metabolism. It is also most likely that the auxin activity shown by these oximes is dependent on this conversion within the cells of the test material. When the auxin activity of the respective oximes and acids is considered, the inactivity of 3-indole-aldoxime is not surprising since the expected product of metabolism, 3-indolecarboxylic acid, is inactive (Table 1).

The significant auxin activity of 2 : 3 : 6-trichlorobenzaldoxime in the wheat cylinder test contrasts with its inactivity in the pea tests. Evidence was obtained in metabolism experiments confirming that wheat tissue converts 2 : 3 : 6-trichlorobenzaldoxime to 2 : 3 : 6-trichlorobenzoic acid, whereas with pea tissue this was not the case. Further examination of this interesting difference in the behaviour of wheat and pea tissue with 2 : 3 : 6-trichlorobenzaldoxime is proceeding.

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Volatile Amines as Components of Toasted Oat Flakes

DURING the toasting process of oat flakes a number of components influencing their organoleptic properties are developed. Some of them escape with the steam; others are non-volatile. Among the non-volatile components the carbonyl compounds predominate[1]. It is, however, interesting that during the toasting process amines, a number of sulphur compounds and other so far unidentified compounds are also formed. For isolation, the volatile compounds obtained in processing were transferred to corresponding chlorides. On purifying the samples to be examined, the amines were separated by means of paper chromatography and identified by their standards, R_F values and by means of the necessary agents.

Table 1. AMINES AS COMPONENTS PRESENT IN TOASTED OAT FLAKES

Spot	Amine	R_F value	Relative amount of component	Colour
1	*NN'*-di-1,4-diaminobutane	0·03	+	red-violet
2	1,3-Diaminopropane	0·10	+	red-violet
3	1,4-Diaminobutane	0·12	+	red-violet
4	1,5-Diaminopentane	0·15	+	violet
5	Unidentified	0·18	+ + +	yellow
6	Ethanolamine	0·15	+	violet
7	Methylamine	0·30	+ +	violet
8	Unidentified	0·32	+	violet
9	Dimethylamine	0·33	+	brown-violet
10	Ethylamine	0·39	+ + +	violet
11	iso-Propylamine	0·45	+ +	grey-violet
12	Propylamine	0·50	+	violet
13	iso-Butylamine	0·58	+	violet
14	Butylamine	0·61	+ +	violet
15	Amylamine	0·71	+ + +	violet

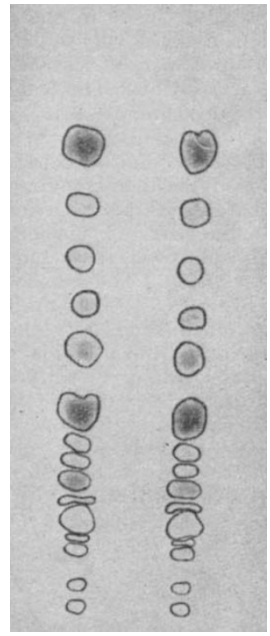

Fig. 1. Chromatogram of volatile amines present in toasted oat flakes. Solvent system, *n*-butanol–glacial acetic acid–water (4 : 1 : 5); developing time 24 h; detection by ninhydrin

Analytical results showed that during the toasting process of flakes a variety of amines was formed. In accord with the supposed formation the aliphatic amines C_1–C_5 are present, constituting the major part of the total amount. The diamines are represented in relatively small amounts by putrescine, cadaverine and 1,3-diaminopropane. Of the polyamines, *NN'*-di-1,4-diaminobutane is present in traces. The small amount of ethanolamine apparently originates by the splitting of phospholipid, probably cephalin. Of the secondary amines, dimethylamine present in traces was identified.

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