(The average results of all experiments)

Dilutions	The weight of shoots									
	Amyl-alcohol	Butyl-alcohol	Xylen	Benzene	Ethyl-alcohol	Acetone	Chloroform	Sulphuric ether	Petroleum ether	Water control
1:5						0	0	0	0	5,1 ± 0,005
1:10					0	1,4 ± 0,09	0,9 ± 0,17	2,1 ± 0,11	0,9 ± 0,18	
1:20	0	0	0	0	0,8 ± 0,21	2,8 ± 0,10	1,3 ± 0,13	2,9 ± 0,16	1,9 ± 0,14	
1:50	0,3 ± 0,05	0,4 ± 0,07	0,9 ± 0,15	0,6 ± 0,18	2,1 ± 0,13	2,8 ± 0,12	2,1 ± 0,27	3,1 ± 0,12	4,8 ± 0,14	
1:100	0,7 ± 0,10	0,9 ± 0,13	1,7 ± 0,16	2,8 ± 0,12	3,5 ± 0,23	4,1 ± 0,21	5,1 ± 0,32	6,0 ± 0,12	7,5 ± 0,18	
1:200	1,6 ± 0,08	2,0 ± 0,12	2,3 ± 0,14	3,8 ± 0,16	4,4 ± 0,11	4,1 ± 0,19	5,7 ± 0,12	6,3 ± 0,18	7,6 ± 0,14	
$1:10^3$	4,2 ± 0,16	4,8 ± 0,12	4,7 ± 0,28	5,4 ± 0,16	5,2 ± 0,27	5,3 ± 0,15	6,0 ± 0,18	7,4 ± 0,15	8,8 ± 0,12	
$1:10^4$	4,2 ± 0,14	5,8 ± 0,21	5,6 ± 0,25	6,1 ± 0,28	5,3 ± 0,18	5,6 ± 0,18	8,0 ± 0,15	8,0 ± 0,19	9,0* ± 0,08	
$1:10^5$	7,0*[1] ± 0,25	6,0 ± 0,16	8,0* ± 0,20	7,0 ± 0,14	7,1 ± 0,15	7,9* ± 0,14	8,5 ± 0,26	8,4* ± 0,11	8,5 ± 0,18	
$1:10^6$	6,5 ± 0,19	7,2 ± 0,14	7,0 ± 0,12	8,0* ± 0,19	7,5* ± 0,18	7,0 ± 0,31	9,5* ± 0,11	6,5 ± 0,18	7,5 ± 0,14	
$1:10^7$	5,6 ± 0,22	8,0* ± 0,21	6,4 ± 0,17	6,5 ± 0,16	5,5 ± 0,14	7,0 ± 0,18	8,5 ± 0,16	6,0 ± 0,25	5,0 ± 0,10	
$1:10^8$	5,2 ± 0,15	6,9 ± 0,16	6,1 ± 0,25	6,4 ± 0,12	5,2 ± 0,17	6,2 ± 0,25	7,0 ± 0,22	5,1 ± 0,31	5,0 ± 0,17	
$1:10^9$	5,2 ± 0,09	5,3 ± 0,19	5,3 ± 0,18	5,3 ± 0,17	5,0 ± 0,13	5,1 ± 0,14	5,1 ± 0,18	5,0 ± 0,13	5,0 ± 0,22	

* The highest value in each column marked with *.

rung. Die Einzelheiten sind in der Tabelle wiedergegeben.

Die Untersuchungen zeigen, daß auch die kleinsten Spuren der organischen Lösungsmittel einen Einfluß auf das Pflanzenwachstum ausüben können. Das muß bei der Ausführung der Experimente berücksichtigt werden.

The Action of 6-Amino Undecane on Wheat Seedlings

According to VELDSTRA's[1] findings fatty acids with branched chains have a greater physiologic activity than acids with a straight chain of the same size. This is supposed to depend upon the balance between lipo- and hydrophilic groups.

The experiments which were carried out on wheat plants with di-n-amylacetic and lauric acid (BURSTRÖM[1]) confirmed this result for branched and unbranched lipophilic chains containing a hydrophilic COOH.

In the present research the effect of 6-amino undecane-HCl has been investigated on wheat seedlings. This compound structurally resembles di-n-amylacetic acid, but it contains an amide (NH_2) group in the middle of the lipophilic chain. The main purpose was to compare the physiologic activity of the amide with that of the acid. Towards this end comparative experiments were carried out on various physiologic processes such as growth, permeability, water balance, and transpiration.

The observations on the growth, in various amide concentrations at different intervals of time (Table I) revealed that there was a gradual retardation in growth starting from the third day on. This delay in the elongation of the shoots was statistically significant even within the first two days.

[1] H. VELDSTRA, Soc. Chim. Biol. *30*, 772 (1948); *31*, 1 (1949).

[1] H. BURSTRÖM, Physiol. Plant. *2*, 197 (1949); *2*, 332 (1949); *3*, 175 (1950).

Table I

Shoot and root length of plants treated with different concentration of 6-amino undecane-HCl. Experiment with flowing nutrient solution; age of the plants at the start three days. Average of 12 plants, lengths in mm of first leaf and three initial roots.

Concentration	2 days old		4 days old		6 days old	
	shoots	roots	shoots	roots	shoots	roots
0	44·4 ± 1·2	53·8 ± 1·5	96·5 ± 2·3	92·1 ± 1·7	149·1 ± 2·0	121·1 ± 2·5
10^{-6}	42·4 ± 1·5	49·8 ± 1·5	93·9 ± 1·8	88·7 ± 1·5	142·7 ± 2·2	116·9 ± 2·3
10^{-5}	39·0 ± 1·2	46·7 ± 1·4	85·7 ± 2·4	77·4 ± 2·1	127·0 ± 2·6	104·4 ± 2.7
10^{-4}	35·9 ± 1·2	48·8 ± 1·4	67·4 ± 1·7	74·3 ± 1·5	94·8 ± 2·9	95·2 ± 2·1

In 10^{-4} mol around the fifth day the leaf bases started wilting locally and the leaves bent to one side. At the same stage the roots showed some brownish spots on their surfaces. A microscopic investigation of the latter effect showed that the amide particularly affected the trichoblast cells of the elongation zone, causing a coagulation of the cytoplasm. In the leaves the situation was different, there the amide produced a reversible loss of water, causing folding of the walls of the chlorenchyma and a plasmolysis of the parenchyma of the bundle sheaths.

By the application of staining and plasmolytic methods the vitality of the treated shoot and root cells was studied. Plasmolysis and staining times were considerably shorter than those of the controls. This fact revealed an increased permeability of the cells.

Transpiration measurements did not show any significant difference between treated and untreated plants (Table II) although there was a decrease in the water content of the leaves. From an analysis of the water balance it can be concluded that this decrease depended upon a reduced water supply through the roots. This results in a wilting, localized to the most rapidly elongating part of the leaf.

Table II

The transpiration of plants treated with 6-amino undecane-HCl. Values given in mg/20 min. and means of 5 expects.

Age of the plants	Transpiration mg		
	Control	$3 \cdot 10^{-5}$ mol/l	10^{-4} mol/l
4 days	6·9	6·1	6·1
5 days	6·3	6·1	5·4

From the above mentioned observations the following conclusions can be drawn: the loss of water in the zone of cell elongation together with the increased permeability indicate some specific cytoplasmic action of the amide which is different from that of the homologous acids.

MÜRÜVVET HASMAN

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Zusammenfassung

Eine Untersuchung der physiologischen Wirkungen von 6-Amino-undekan-HCl führte zu folgenden Ergebnissen:

1. Wurzel- und Sproßwachstum von Weizenkeimlingen wurde in Lösungen verschiedener Konzentration während 6 Beobachtungstagen in steigendem Maße gehemmt. In 10^{-4} mol. trat in den Trichoblasten der Wurzelepidermis Plasmakontraktion auf. Gleichzeitig begannen infolge der ungenügenden Wasserversorgung die Blattblasen zu welken, und die Blätter sanken seitlich herab.

2. Auf Grund von Plasmolyse- und Färbungsversuchen konnte auf eine Erhöhung der Plasmapermeabilität geschlossen werden.

3. Eine eindeutige Beeinflussung der Transpirationsintensität war nicht nachzuweisen.

Human Isolated Chromosomes. Normal and Pathological Chromosomes of Leucocytes

I have been studying the chromosomes of the blood cells[1] for the last few years with recent staining techniques. With reference to the white series, my investigations have been directed towards the leukaemic cell[2]. Proofs have been obtained in several mitoses of leukaemic cells of a characteristic appearance of the chromosomes, which are found to be very thick with a homogeneous length, strongly stained and paired two by two, recalling a meiotic stage. Besides these mitoses, other were seen with numerical alterations of the chromosomic set. Further investigations with histo-chemical methods revealed a typical appearance of the leukaemic chromosomes, since they stained more strongly with the Feulgen reaction than those of the normal white cells[3]. This is in agreement with what has been shown afterwards by authors[4] using quantitative methods. Since the methods I followed did not allow to note differences in the nuclei of the cells during the resting stage, investigations were directed towards the recent methods of isolation of the chromosomes. While studies have already appeared concerning isolated chromosomes of mammals, none at all is known for human chromosomes, since the requirement for all methods of isolation is to work with a fair quantity of fresh tissue[5].

The only way of obtaining a certain quantity of fresh human cells was connected with the chance of separating quickly the white elements from the red ones.

Among the various means proposed to quicken the speed of sedimentation (starch, gum arabic, gelatine, fibrinogen) I chose gum arabic for the two following reasons:

[1] E. POLLI, Arch. Sci. Med. *82*, 425 (1946); Atti 7° Cong. Soc. It. Ematol. 333 (1947); Atti Soc. Lomb. Sci. Med. Biol. *1*, 7 (1946).

[2] E. POLLI, Ann. Biol. norm. e pat. *1*, 4 (1947); Boll. Soc. It. Biol. Sper. *25*, 48 (1949).

[3] E. POLLI, Atti Cong. Soc. It. Med. Int. *48*, 253 (1947); Exp. Cell Res. *1*, 460 (1950).

[4] B. THORELL, Acta Med. Scand. *129*, Suppl. 200 (1947). – M. L. PETERMANN and E. J. MASON, Proc. Soc. Exp. Biol. a. Med. *69*, 542 (1948).

[5] A. CLAUDE, Harvey Lectures, Series *43* (1947/48). – A. E. MIRSKY and H. RIS, J. Gen. Physiol. *31*, 1 (1947).