animals. The skin also shows a second contraction between 67 and 70° C. After the ninth month, in a continuously increasing degree, a third and fourth step of contraction appear at higher temperatures (up to 82° C).

The sciatic nerve also shows a thermo-elastic contraction after the fourth month at 76–80° C. This increases with age, and, as in the case with the skin, several more steps of contraction appear at higher temperatures, up to 92° C. It is improbable that these thermo-elastic contractions are related to «elastin». The changes with increasing age, however, show a similarity to the age changes of «elastin» in so far as the thermic contractility increases with age.

Vitamin Requirements of Decotylised Pea Seedlings Cultivated in the Dark

If the biosynthetic capacities of a decotylised pea seedling grown in darkness are compared with those of an excised pea root, certain differences can be observed. As has earlier been demonstrated[1], the seedlings, but not the excised roots, require arginine, glycine and adenine for optimum growth in an ordinary sucrose-mineral salt medium supplied with a mixture of water-soluble vitamins. Freshly excised roots on the other hand are quite unaffected by the three metabolites mentioned, and even in a vitamin-free medium they reach a length of at least 150 mm owing to the vitamin reserve present in the roots when excised. However, after one or two transfers of the root tips the growth comes to an end. Continued growth of the excised roots is made possible only by adding thiamin and niacin to the medium, in accordance with the observations of ADDICOTT and BONNER[2].

If decotylised pea seedlings are cultivated in a vitamin-free medium identical with that used for excised roots but containing arginine, glycine and adenine, the growth very soon stops, as does that of the shoot later. The main root usually does not exceed a total length of 100 mm. A closer investigation demonstrated that in this case the vitamins thiamin and pyridoxin are required, while niacin possessed a very weak or no effect (see table).

The effect of thiamin (B_1), pyridoxin (B_6) and niacinamide (Nic), each 100 μg/l, on the growth of decotylised pea seedlings ("Torsdag III" variety) cultivated in darkness at +25°C. Nutrient solution supplemented with arginine, glycine and adenine, each 0·3 mM, and solidified with 1·5% agar. Each culture tube contained 10 ml of nutrient medium. Incubation time 15 days. The original root length 31 mm. Ten plants, or roots, in each series. Further particulars of the cultivation technique published elsewhere[3].

Experimental material	Vitamins added	Length in mm		No. of laterals per root system
		Shoot	Main root	
Decotylised plants	No vitamins	111 ± 3	84·7 ± 4·2	7·1
	B_6 + Nic	114 ± 3	90·8 ± 3·6	8·6
	B_1 + Nic	116 ± 3	91·4 ± 6·9	6·9
	B_1 + B_6	116 ± 1	123·0 ± 2·6	10·6
	B_1 + B_6 + Nic	113 ± 2	136·5 ± 2·5	11·2
Excised roots	No vitamins	–	134·0 ± 3·9	17·6
	B_1 + B_6 + Nic	–	142·4 ± 1·0	17·1

[1] N. FRIES, Physiologia Plantarum *6*, 292 (1953); Symbolae Botan. Upsal. XIII, *1*, 1 (1954).
[2] F. T. ADDICOTT and J. BONNER, Science *88*, 577 (1938).
[3] N. FRIES, Symbolae Botan. Upsal. XIII, *1*, 1 (1954).

This shows that in darkness the shoot is not only unable to produce these vitamins, but also utilizes most of the vitamin reserve of the hypocotyl and the young root. The pyridoxin requirement may indicate a complete inability or at least an insufficient ability to produce pyridoxin in the shoot. The pyridoxin synthesising power of the root is obviously sufficient for maintaining the growth of the root but not for the combined requirements of root and shoot.

These observations, together with others made earlier[1], show that even under completely heterotrophic conditions the morphogenesis of the pea plant is accompanied by a differentiation into parts differing from each other as regards the ability to synthesise essential metabolites.

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Zusammenfassung

Abgeschnittene Erbsenwurzeln wachsen, wie schon frühere Untersuchungen gezeigt haben, unbegrenzt in einer Nährlösung mit Thiamin (Vitamin B_1) und Niacin als die einzigen zugesetzten Vitamine. Das konnte auch mit der in dieser Arbeit verwendeten Erbsenrasse bestätigt werden. Dekotylisierte Erbsenkeimlinge, die unter denselben Bedingungen in Dunkelheit kultiviert wurden, brauchten aber Thiamin und *Pyridoxin* (Vitamin B_6). Ein Bedürfnis von Niacin zeigte sich dagegen während der angewandten Versuchszeit bei diesen Keimlingen nicht.

[1] N. FRIES, Physiologia Plantarum *6*, 292 (1953); Symbolae Botan. Upsal. XIII, *1*, 1 (1954). – S. SAUBERT-V. HAUSEN, Physiologia Plantarum *1*, 85 (1948).

Le potassium et le sodium de l'humeur aqueuse du lapin et leurs variations sous l'effet de l'acétazolamide (Diamox)

De récentes recherches ont démontré que la tension intra-oculaire s'abaisse, surtout en cas de glaucome, après l'administration d'acétazolamide (Diamox)[1]. Cependant, le mécanisme de cette action n'est pas élucidé. On sait que l'acétazolamide est un inhibiteur spécifique de la carboanhydrase, ferment qui catalyse l'hydratation du CO_2 et peut favoriser la formation des bicarbonates. Or, le corps ciliaire contient de la carboanhydrase[2]. De plus, l'humeur aqueuse présente un taux de bicarbonates assez important, supérieur à celui du sang[3]. Ainsi on peut se demander si l'abaissement de la tension intra-oculaire, sous l'effet du Diamox, n'est pas dû à une inhibition de la carboanhydrase du corps ciliaire, et si ce ferment n'influence pas la composition ionique et la pression osmotique de l'humeur aqueuse. Nous nous sommes donc proposé d'étudier l'action du Diamox sur certaines électrolytes de la chambre antérieure, notamment sur les taux du sodium et du potassium.

Matériel et méthodes. Nous avons utilisé 21 lapins de 2,5 à 3 kg, soumis à des conditions de vie identiques.

[1] B. BECKER, Amer. J. Ophth. *37*, 13 (1954).
[2] P. H. WISTRAND, Acta Physiol. Scand. *24*, 144 (1951).
[3] V. D. KINSEY, A.M.A. Arch. Ophth. *50*, 401 (1953).