Für Dosen gleicher Toxizität ist die Strahlenschutzwirkung von I mindestens gleich derjenigen des Cysteamins. Die DL_{50} (nach KAERBER), intraperitoneal an der Maus bestimmt, betrug für I = 3201 mg/kg ($\pm$ 2 σ = 2923–3504) gegenüber 230 mg/kg ($\pm$ 2 σ = 217–245) für Cysteamin.

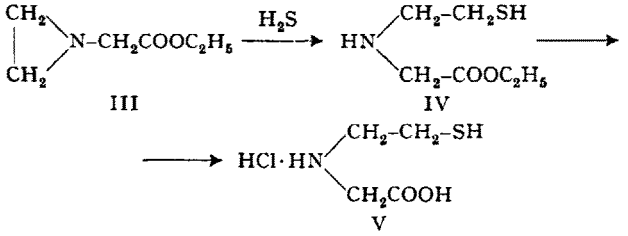
Die rasche intravenöse Injektion von Dosen über 500 mg/kg verursacht beim Kaninchen in Chloralosenarkose vorübergehenden Druckabfall und Hyperpnoe.

Die chronische Toxizität ist ebenfalls gering.

Die intraperitoneale Verabreichung von 1 g/kg/Tag während 5 Tagen pro Woche auf die Dauer von 6 Wochen bei der Maus verursachte weder Gewichtsabnahme noch Erhöhung der Mortalität.

Ein depressiver Effekt auf das hämopoietische System, wie er bei Cysteamin beobachtet wurde, trat nicht auf. Die histologische Untersuchung der Leber und der Nieren am Ende der Behandlung zeigte keine Schädigung dieser Organe.

Cysteaminessigsäure wurde nach folgendem Schema hergestellt:



Der Äthyleniminoessigsäureäthylester (III) wurde nach BESTIAN[3] aus Äthylenimin und Chloressigsäureäthylester in Gegenwart von Triäthylamin dargestellt. Hierauf wurde der Äthyleniminring durch Eintropfen in eine methanolische Lösung von Schwefelwasserstoff bei – 60°C geöffnet. Durch Destillation wurde der Cysteamin-N-essigsäureäthylester (IV) (Siedepunkt 116–118°C/4 mm) erhalten. Nach Verseifen mit 2 *N* Salzsäure und Eindampfen zur Trockne wurde das Chlorhydrat der Cysteamin-N-essigsäure (V) erhalten, welches nach Umkristallisieren aus Äthanol bei 158–160°C schmolz.

$C_4H_{10}O_2NSCl$

berechnet	C 27,98	H 5,87	N 8,16	S. 18,68	Cl 20,66
gefunden	C 28,15	H 5,98	N 8,11	S. 18,86	Cl 20,71

Die Ausbeute betrug 80% bezogen auf (III).

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Forschungslaboratorien der Bracco Industria Chimica, Mailand, 3. Oktober 1958.

Summary

The preparation of cysteamine-N-acetic acid, a new X-ray protecting substance, is described and some pharmacological properties are given.

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The Effect of Triton and Diphenylylethylacetic Acid on Cholesterol and Fatty Acid Biosynthesis in Isolated Perfused Liver

Diphenylylethylacetic acid or biphenyl butyric acid (DFLEA), an inhibitor of coenzyme A[1] and of cholesterol and fatty acid biosynthesis[2], is able to reduce partially the hypercholesteremia and hyperlipemia in Triton treated rats[3]. This effect is confirmed also by experiments showing that DFLEA, added *in vitro* to liver slices or administered or *in vivo*[4], antagonizes the increased hepatic cholesterol and fatty acid biosynthesis induced by Triton.

The significance of the increased hepatic lipid biosynthesis after Triton[5] is still discussed since different hypothesis have been proposed in order to explain the Triton effect. One of these hypothesis stresses the importance of changes in plasma proteins as a causal effect able to raise cholesteremia, decreasing the cholesterol catabolism[6].

Thus we observed the action of Triton and DFLEA on isolated perfused liver: the simplest experimental condition for studying the balance of hepatic and serum cholesterol.

In our experiments we followed the technique of MILLER *et al.*[7]. We used rabbit liver weighting 75–80 g, perfused with 200 ml homologous heparinized (30 u.i./ml Heparin Vitrum) blood and adding as a radioactive substrate sodium acetate-1-C^{14} (0,06 μC/ml – specific activity 2 mC/mM – from the Radio-chemical Centre, Amersham, U. K.). Triton and DFLEA were added at the concentrations reported below. During the perfusion time (4 hrs), samples of blood were taken up and, at the end of the experiment, samples of hepatic tissue were excised for analysis. In control experiments histological liver examination and electrophoretic determinations of serum proteins and lipoproteins were carried out.

The biosynthetized cholesterol was determined according to PIHL[8], fatty acid biosynthesis and substrate oxidation according to POPJÁK[9], hepatic and serum cholesterol according to GRIGAUT[10].

Radioactivity measurements were carried out as previously described[11,4] using a Geiger-Müller counter with a thin mica window.

Our results concerning cholesterol and fatty acid biosynthesis are summarized in the following Table.

Both Triton and DFLEA have no evident activity on substrate oxydation.

The blood and liver total cholesterol was unchanged at the end of the perfusion.

The effect of the used concentration of DFLEA in reducing cholesterol and fatty acid biosynthesis on isolated perfused liver is evident and similar to the effect we already observed *in vitro* and *in vivo*[4].

In our experimental conditions, Triton increases cholesterol and fatty acid biosynthesis in liver before any detectable variation of total cholesterol in perfusing blood

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Group	No. of perfusions	Treatment*	Cholesterol CPM/g liver (±S.E.)	% inhibition	Fatty acids CPM/mg fatty acids (±S.E.)	% inhibition
1	7	Controls	1801 ± 230	—	204 ± 28	—
2	5	DFLEA 0·5 μM/ml	1031 ± 103	42·7	146 ± 22	28·4
3	4	Triton 1·25 mg/ml	4403 ± 417	—	342 ± 56	—
4	4	Triton + DFLEA	2311 ± 218	47·5	212 ± 26	38·0

CPM = counts per min.

Levels of probability: for cholesterol group 1–2: $p < 0{,}05$; 1–3: $p < 0{,}001$; 1–4: $p > 0{,}05$; 3–4: $p < 0{,}002$;
for fatty acids group 1–2: $p > 0{,}05$; 1–3: $p < 0{,}01$; 1–4: $p > 0{,}8$; 3–4: $p < 0{,}05$

* DFLEA was kindly supplied by Maggioni Laboratories, Milano, and Triton W. R. 1339, a polymer of *p-iso*-octylpolioxyethylenphenol, by Rohm and Haas Co., Philadelphia.

or in the hepatic tissue. These data represent a contribution for an analysis of the mode of action of Triton.

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Institute of Pharmacology, University of Milan (Italy), June 20, 1958.

Riassunto

L'acido difenililetilacetico antagonizza, nel fegato perfuso di coniglio, l'aumento di incorporazione dell'acetato-1-C^{14}, nel colesterolo e negli acidi grassi, indotto dal Triton.

Temperature-Induced Reversal of Dominance of Variegation in 'Ornamental Kale'

Among the auxotrophic mutants of *Neurospora*, approximately 8% are temperature-sensitive. It is therefore not surprising that temperature-sensitive mutants occur in higher plants. Examples which have been reported include recessive albinism in barley (COLLINS[1]), flower-pigmentation in *Primula sinensis* (BAUR[2]), and thiamineless in *Arabidopsis thaliana* (LANGRIDGE[3]). This report concerns a mutant of *Brassica oleracea* L. which has unusual features resulting from its temperature-sensitivity.

'Ornamental kale' is a variety of *Brassica oleracea* L. in which the leaves become variegated during the winter in South Australia. Seeds sown in late summer produce wholly green seedlings. In early winter, white tissue appears near the midrib and spreads outwards. In spring, the white parts become green; i.e. the albinism is reversible. In some plants all the leaves may become quite white except for a narrow green margin, while the inflorescences appearing in spring are also devoid of chlorophyll. At the other extreme, the albinism may be confined to the midrib and a narrow strip alongside it in the floral bracts, while the inflorescences in such plants are usually green except for white patches below the bases of the pedicels. Thus there is great variation in the extent of the white tissue. The date when white tissue first appears also varies, e.g. in 1955, from May 10 to August 11. Generally speaking, earliness of appearance is correlated with a large amount of white tissue and *vice versa*.

A plant showing extensive and early variegation and subsequently shown to be true-breeding for the character, was crossed to broccoli (Yates Green Sprout). Meiosis in the F1 appeared to be normal, nine bivalents being formed. Six F1 plants from each of the reciprocal crosses were sown on March 6, 1955, planted out into the field on April 13 and all showed variegation within three days of June 2. The extent of variegation was quite uniform, there being a narrow margin of white tissue alongside the midribs of the inner leaves of the rosette.

A further 16 plants from the same cross were planted in pots at the same time and divided between four treatments viz.

Long day (18 h) in the glasshouse.
Long day (18 h) and outdoor temperatures.

Natural day (10–11½ h) in the glasshouse.
Natural day and outdoor temperatures.

The plants in the long day grew more quickly than those in the short day but the length of day made no difference to the date when albinism first appeared. Temperature had a marked effect. All 8 plants outside the glasshouse showed variegation about a week after their sibs in the field (i.e. on June 10). By July 13, those in the glasshouse still showed no sign of variegation. Half those inside the glasshouse were then placed outside and *vice versa*. The 4 variegated plants from outside, on being placed in the glasshouse, started to become green immediately and were almost normal after 14 days. The 4 green plants from the glasshouse showed the first signs of variegation, a narrow white strip alongside the midribs of the inner leaves, from 14 to 18 days after being placed outside. The 4 left inside the glasshouse and the 4 left outside showed no change.

Variegation seems to be a response to temperature, although what the critical temperatures are, is uncertain. The glasshouse was heated to 21°C. The outside temperatures during the 14 days between removal from the glasshouse and the appearance of variegation ranged from a mean daily maximum of 13·2°C to a mean daily minimum of 7·7°C.

In all, 24 F1 plants (12 in the field, 12 in pots) were exposed to outside temperatures and all showed variegation. All 41 F1 plants from another similar cross were also variegated. It is reasonable to assume that in this season the character was always expressed. In a F2 family growing at the same time there were 73 variegated and 25 non-variegated plants. In the progeny from the backcross to broccoli there were 26 variegated and 22 non-variegated plants. The difference between variegated and non-variegated plants is apparently controlled by a single gene difference, the variegated allele being dominant. Moreover, because the variegated backcross and F1 plants are always of the less variegated type while the extreme types are true-breeding for variegation, there seems to be

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