4 ml of the filtrate were added to 2 ml of TBA solution[5], and heated in a boiling water bath; after refrigeration, the colour was measured using a Lange colorimeter (type IV) against H_2O with a green filter. The absorbencies given in the graph are the differences between the values of the samples without incubation (which varied between 0.000 and 0.028) and the samples after 1 h incubation at 37°C.

The following observations were made: (1) When compared with the situation at the beginning of the experimental period, an increase of the rate of formation of the TBA chromogens was noted in the animals fed *ad libitum* and those undernourished. (2) In the rats fed *ad libitum* which were given thyroxine, a statistically insignificant inhibition of the TBA chromogen formation occurs in comparison with the same control group without thyroxine. (3) In the undernourished rats which were injected with thyroxine, the TBA chromogens were evidently produced more slowly than in both groups without thyroxine, and in the group fed *ad libitum* and treated with thyroxine.

The statistically significant difference in the response to thyroxine emphasizes the importance of the nutritional condition of the experimental animals in the evaluation of the antioxidant effect of the drug examined.

The rate of formation of TBA chromogens during incubation generally depends[6–8] on the content of oxidation substrates (polyunsaturated fatty acid and their derivatives), catalysts and inhibitors (antioxidants), all of which may be influenced by the nutritional state.

Zusammenfassung. Es wurde der Einfluss des Thyroxins auf die Bildung der Oxydationsprodukte von Lipiden in Homogenaten des Rattenlebergewebes bei verschiedenem Ernährungszustand untersucht. Bei den während 24 Tagen unterernährten Ratten, nach 10-tägiger Thyroxinverabreichung (30 µg/100 g Gewicht), wurden im Leberhomogenat deutlich weniger Oxydationsprodukte der Lipide gefunden als bei den Kontrollratten (1. Nahrung *ad libitum* und 2. Nahrung *ad libitum* mit appliziertem Thyroxin).

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The Effects of an Indole Derivative 6-(2'-Aminopropyl Indole) on the General and Coronary Haemodynamics of the Intact Dog

This paper concerns the cardiovascular actions of an indole derivative, a racemic 6-(2'-amino-propyl) indole, synthesized by Sandoz (Basle) and coded as MR 689. It is said not to be a tryptamine derivative, in so far as the side chain is placed in the 6th position of the benzene ring. The drug is said to have antireserpine properties, but it is not an inhibitor of monoamine oxidase[1].

Methods. The effect of the drug was studied in eight dogs. The methods have previously been described in detail[2,3], and include measurement by the Fick principle of cardiac output and coronary flow before and after the administration of the drug; thus after the control measurements, MR 689 (0.5 mg/kg) was dissolved in 15 ml of saline; 5 ml was given initially, 5 ml after 5 min, and 5 ml 10 min after the first intravenous injection. This gave a reasonably steady state of hypertension during which cardiac output and coronary flow were again measured.

Discussion. The results are shown in Tables I–III and suggest that this drug, unlike other indole-alkylyamines[4,5], has little effect upon respiration. The increases in blood oxygen content, and the maintenance of saturation, are due to the increase in haemoglobin. The parallel trends in cardiac output and systemic pressures increase both pressure and flow work, but maintain vascular resistances at control levels. The increase in coronary flow is modest, and coronary vascular resistance is unchanged. The increase in myocardial oxygen extraction (Δ arterial-coronary sinus O_2) is a function of the increase in arterial oxygen.

Table I. General metabolism

Factor	Control	Experimental
Respiratory rate, per min	18±6	17±6
Respiratory volume (l/min)	3.4±1.2	3.7±1.4
Tidal volume (ml)	209±56	250±73
O_2 consumption (ml/min)	123±31	132±34
CO_2 production (ml/min)	97±27	112±35[a]
Exchange ratio (R.Q.)	0.78±0.03	0.84±0.08[a]
Arterial O_2 content (vol. %)	18.3±1.2	20.2±1.5[a]
Mixed venous O_2 content (vol. %)	14.3±2.0	16.6±2.0[a]
Δ Arterial-mixed venous O_2	4.0±0.7	3.6±1.2[a]
Mixed venous CO_2 (vol. %)	48.7±4.6	47.0±4.3[a]
Arterial CO_2 (vol. %)	45.8±4.3	43.3±3.5[a]
Δ Mixed venous-arterial CO_2 (vol. %)	2.9±1.2	3.7±1.2[a]
Haemoglobin (g %)	15.8±1.3	18.0±1.3[a]
Haematocrit	54±4	61±4
pH (units)	7.28±0.05	7.30±0.05

Figures are group means with S.D. Statistical comparison by '*t*' test.
[a] = *p* value of change 0.05 or less.

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The major changes which are now reported then are increased haemoglobin, cardiac output, systemic and pulmonary arterial pressures, coronary flow, and cardiac oxygen metabolism. The increase in haemoglobin is probably due to splenic contraction. In this, MR 689 is similar to catecholamines[6], and to its structural relatives tryptamine[7] and α-methyl tryptamine or psilocybin[8]. Like tryptamine, MR 689 also increases vascular pressures and cardiac output. The mechanism of these actions is not fully explained by the present study, but the actions are reasonably characteristic of a sympathomimetic drug[6].

The modest increase in coronary flow has been described for the closely related compound tryptamine, α-methyl tryptamine and serotonin[7,9].

Thus although MR 689 is structurally different from tryptamine and certain related compounds, the broad profile of its cardiovascular effects are remarkably similar. The differences in pharmacological properties of MR 689, e.g. enhanced reserpine antagonism and weak monoamine oxidase inhibition, appear not to affect the similarity of cardiovascular effect. It is, however, noteworthy that this drug (MR 689), unlike tryptamine and its derivatives, had no obvious effect upon the animal's respiration.

Table II. Pressure-work responses

Factor	Control	Experimental
Cardiac output (l/min)	3.1±1.1	3.7±1.2[a]
Heart rate, min	84±10	73±14
Stroke volume (ml)	37±12	51±24[a]
Femoral pressure (mean, mmHg)	119±17	146±12[a]
Left ventricular work (kg/*M*/min)	5.0±1.9	7.3±3.3[a]
Calculated peripheral resistance (c.g.s. units)	3068±1212	3153±1336
Pulmonary arterial pressure (mean, mmHg)	12±2.7	18±3[a]
Right ventricular work (kg/*M*/min)	0.50±0.26	0.92±0.41[a]
Calculated pulmonary resistance (c.g.s. units)	304±120	395±178

Figures are group means with S.D. Statistical comparison by '*t*' test. [a] = *p* value of change 0.05 or less.

Table III. Coronary haemodynamics; cardiac oxygen and carbon-dioxide metabolism

Factor	Control	Experimental
Coronary blood flow (ml/100 g heart/min)	81±8	99±13[a]
Coronary vascular resistance[b] (arbitrary units)	1.47±0.27	1.48±0.24
Coronary sinus O_2 content (vol. %)	7.2±3.1	8.1±1.5
Δ Arterial-coronary sinus O_2	10.2±2.8	12.1±1.5
Coronary sinus CO_2 (vol. %)	53.9±4.3	51.8±4.2
Δ Coronary sinus-arterial CO_2 content (vol. %)	9.0±2.0	9.9±1.7
Cardiac respiratory quotient	0.88±0.12	0.82±0.10
Cardiac metabolic rate-O_2[c] (ml/100 g heart/min)	8.3±1.5	12.0±2.5[a]
Cardiac metabolic rate-CO_2 (ml/100 g heart/min)	7.3±0.7	9.8±2.0[a]
'Index of efficiency' (L.V. work/CMR O_2)	0.60±0.39	0.61±0.27

Figures are group means with S.D. Statistical comparison by '*t*' test. [a] = *p* value of change 0.05 or less, [b] = Systemic pressure/coronary flow. [c] = Metabolic rate = coronary flow × Δ arterial-coronary sinus O_2.

Zusammenfassung. Bei mehreren Experimenten an Hunden mit Indolderivaten (MR 689 Sandoz) hat sich erwiesen, dass der vaskuläre Blutdruck, das Minutenvolumen, die Herzarbeit, der koronare Blutkreislauf und der O_2-Verbrauch sich erhöhte bei Erhaltung der Herzleistung.

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DISPUTANDUM

Rote Augen als Mutante bei *Culex pipiens* L.

Kürzlich wurde von WILD[1] über eine rote Augenfarbmutante bei *Culex pipiens* berichtet. Von vier bestrahlten Männchen (4000 R) lieferten deren zwei (!) Nachkommen mit der Mutation *r* (red eye). Es wurde sodann gezeigt, dass es sich bei diesem Faktor um ein geschlechtsgekoppeltes Gen handelt.

Vor drei Jahren haben wir unabhängig von WILD ebenfalls eine rotäugige Mutante bei *Culex pipiens* gefunden und im Rahmen einer Diplomarbeit beschrieben[2]. Auch diese Mutante trat in einer Kultur auf, in der die Männchen bestrahlt worden waren. Für unser mutiertes Gen *ra* (rote Augen) wurde folgendes festgestellt: (1) Rezessivität

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