Letters to the Editor

Effect of aryl isothiocyanates on ^{131}I uptake by the mouse thyroid gland*

SIR,—Thiocyanate salts are known to block iodine uptake by the thyroid gland, and we wondered if aryl isothiocyanates might also exert this effect.

Groups of seven male mice (Swiss-Webster type) weighing about 28 g were treated orally with 150 mg/kg of α-naphthyl, β-naphthyl, or phenylisothiocyanates. According to VanderLaan & VanderLaan (1947), the animals were then immediately injected with propylthiouracil, 2 mg/mouse, to prevent the binding of ^{131}I by thyroglobulin. 30 min later the animals were treated with 2 μc ^{131}I per mouse. The animals were killed 90 min later, at 2 hr after treatment with the aryl isothiocyanates. Whole blood was collected and heparinised. Rather than attempt to isolate individual mouse thyroid glands, a section of trachea with the adhering glands was taken.

The radioactivity of the trachea block and of blood was measured in a Baird-Atomic scintillation detector, Model 810B and Baird-Atomic scaler, Model 132. Counts per μl of blood were converted to counts per μl of serum by use of a factor (1·33) to account for the small uptake of ^{131}I by erythrocytes. The thyroid (iodide) space was then calculated.†

Statistical analysis was by an analysis of variance and the Tukey test for significance of the differences of the means (Snedecor, 1956). Results are shown in Table 1.

TABLE 1. EFFECT OF ARYL ISOTHIOCYANATES ON THYROID UPTAKE OF ^{131}I

Treatment	Thyroid space (μl)*
α-Naphthylisothiocyanate	421 ± 51†
Phenylisothiocyanate	321 ± 26
Untreated control	288 ± 40
β-Naphthylisothiocyanate	254 ± 24

* Mean ± standard error.
† Mean value is significantly larger than that of the untreated control group at the P0·05 level.

Phenylisothiocyanate and β-naphthylisothiocyanate did not significantly alter thyroid space. However, the results indicated that α-naphthylisothiocyanate enhanced, rather than blocked, iodide uptake by the thyroid. Hence, α-naphthylisothiocyanate has, apparently, altered the blood-thyroid barrier in respect to iodide transport into the thyroid gland in some unexplained fashion. The action of α-naphthylisothiocyanate on the blood-thyroid barrier is rapid since the effect was demonstrable 2 hr after oral administration of the drug. Similar rapidity of α-naphthylisothiocyanate action has also been observed in respect to onset of hyperbilirubinaemia in mice (Becker & Plaa, 1963). Because of this rapid action, experiments on the effects of α-naphthylisothiocyanate on

* Supported in part by United States Public Health Service grant No. AM-8083 and Special Fellowship AM-19, 889 from the National Institute of Arthritis and Metabolic Diseases.

† Thyroid iodide space (μl) = $\frac{[\text{thyroid block (cpm)}-\text{background (cpm)}]\ 100}{1{\cdot}33\ [\text{blood (cpm/100 μl)}-\text{background (cpm)}]}$

other physiological barriers seems warranted, as are investigations of the action of α-naphthylisothiocyanate and related aryl isothiocyanates and thiocyanates on the thyroid gland.

Thanks are due to Drs. N. S. Halmi and J. Scranton for the use of equipment and the radioiodide employed.

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August 11, 1964

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Measuring the temperature of a mouse

SIR,—It was pointed out by McLaren in 1961 that the body temperatures of mice could be measured successfully in the rectum, if the mouse were placed on a wire grid and held by the tail. This method, when carried out correctly, causes the least possible restraint of the animal as is clear from Fig. 1. It is

difficult to envisage that holding an animal to measure its body temperature by means of an oesophageal thermocouple (Brittain & Spencer 1964) could cause less restraint.

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August 19, 1964

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