brane has, in different media, a different diffusion capacity. This work suggests that conclusions based on diffusion measurements made on simple aqueous solutions may not be equally valid for biological systems.

The author wishes to thank Dr. F. E. Ray for his suggestions and criticisms.

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Effect of Butazoldin[R] on I^{131} Uptake by the Thyroid Gland—II. (20051)

THOMAS W. GREEN, WILLIAM E. WHITE, E. P. ENGELMAN, AND MARCUS A. KRUPP.
(Introduced by K. G. Scott.)

From the Veterans Administration Hospital, San Francisco, Calif.

Butazolidin[R]* is a pyrazolon derivative which has been found to be useful in the treatment of various rheumatic diseases. In the course of a clinical investigation of effectiveness of this compound a radioactive iodine uptake test for thyroid function was performed and uptake measured 6% at 24 hours, about one-third of normal average and inconsistent with the patients' appearance. This led to the studies reported here.

Methods. The I^{131} uptake of the thyroid gland was determined prior to and after the administration of butazolidin[R] for 2 or 3 days. Each of eleven euthyroid patients and one hyperthyroid patient was given 5-15 μc of I^{131} and after 24 and 48 hours, the radioactivity over the thyroid gland, expressed as percent of the administered dose, was measured using a scintillation counter. After the last measurement a daily dose of 1.0 g of butazolidin[R] was given intramuscularly to each of the patients for 2 or 3 days. A second I^{131} uptake test, using 30-50 μc was performed on 4 of the euthyroid patients 24 hours after the last of 2 daily injections. The remaining 8 patients, including the hyperthyroid case, were tested concomitantly with the administration of the third daily injection of butazolidin[R]. Studies in this laboratory have shown, as might be expected, that the thyroid uptake of a dose of I^{131} is not related to the amount given in μc. The number of iodine atoms which are present in a test or therapy dose of I^{131} represents a quantity which is less than 0.1 μg of iodine.

TABLE I. % I^{131} Uptake by Thyroid at 24 Hr in 14 Patients Receiving Repeat but Variable Amounts Expressed in Microcuries.

Patient	Diagnosis	Dose I^{131} (orally), μc	Date	% uptake
L.	Hyperthyroid	15	8/16/52	66
		125	17	68
		3000	19	65
J.	"	25	9/14/51	65
		6700	20	68
C.	"	66	3/27/52	66
		9100	31	64
W.	"	9	8/ 8/52	75
		8800	13	76
R.W.	"	100	5/ 9/51	52
		7500	12	53
Q.W.	"	120	5/ 1/52	67
		10000	9	64
C.W.	"	20	10/27/51	60
		1000	11/ 1	65
"	"	100	9/27/52	73
		4530	10/ 3	73
K.	Cardiac	15	4/20/52	44
		10000	5/26	45
B.	Euthyroid	46	11/ 4/52	24
		100	12/16	21
V.W.	Thyroid block	5	12/ 3/52	1–2
		50	4	1–2
G.B.	Euthyroid	5	5/28/52	10
		140	6/24	11
H.	"	2	4/16/52	50
		30	17	48
G.W.	"	2	4/16/52	20
		30	17	18

* Butazolidin[R] is 3,5-dioxo-1,2-diphenyl-4n-butyl-pyrazolidin and is marketed as *Butazolidin[R]*. We wish to thank the Geigy Co. for a generous supply of this drug.

TABLE II. Effect of Butazolidin[R] on I^{131} Uptake by Thyroid Gland in 11 Euthyroid Patients and 1 Hyperthyroid Patient.

Patient	Diagnosis	% uptake by thyroid 24 and 48 hr following oral admin. of I^{131}				% reduction in I^{131} uptake after butazolidin[R] admin.	
		Pre butazolidin[R]		Post butazolidin[R]			
		24 hr	48 hr	24 hr	48 hr	24 hr	48 hr
W.B.	Gout	31	32	4	4	87	88
B.	"	23	24	5	4	78	83
S.	"	21	21	2	2	90	90
F.	"	15	18	5	5	67	73
J.*	Psoriasis	26	35	11	18	58	49
H.	Cerebral arterio-sclerosis	13	15	1	2	93	87
E.B.	Chronic hepatitis	17	21	4	7	77	67
H.S.†	Lymphocytic leukemia	18	21	7	7	61	67
T.	Tbc. adenitis	28	26	4	5	85	81
S.W.	Pulmonary density (?)	8	8	1	1	88	88
W.	Rheumatoid arthritis	10	11	1	1	90	89
D.	Hyperthyroidism	57	54	12	8	80	85

* Patients 1-4 received daily 1 g I.M. inj. of butazolidin[R] for 2 days; oral I^{131} given 24 hr after last dose of butazolidin[R].

† Patients 5-12 received daily 1 g I.M. inj. of butazolidin[R] for 3 days; oral I^{131} given concomitantly with last dose of butazolidin[R].

As shown in Table I, uptake is not dependent upon the dosage of I^{131} employed.

Results. The data in Table II show in all cases a reduction in the uptake of I^{131} by the thyroid gland following daily intramuscular injections of butazolidin[R] for 2 or 3 days. In more than half the cases the drug reduced the uptake to less than 20% of the previous level. In all but one of the comparisons (24 and 48 hours) the uptake after butazolidin[R] is less than half what it was before it. The characteristic effect of butazolidin[R] on the thyroid uptake of I^{131} of 3 of the euthyroid patients (Table I, patients 1,2,3) is shown in Fig. 1.

The thyroid I^{131} uptakes in the patient with hyperthyroidism before and after the drug are shown in Fig. 2. The rather high level, 57%, was brought down to a low euthyroid level, 12% by 3 g of butazolidin[R].

Comment. In 12 patients (one hyper-

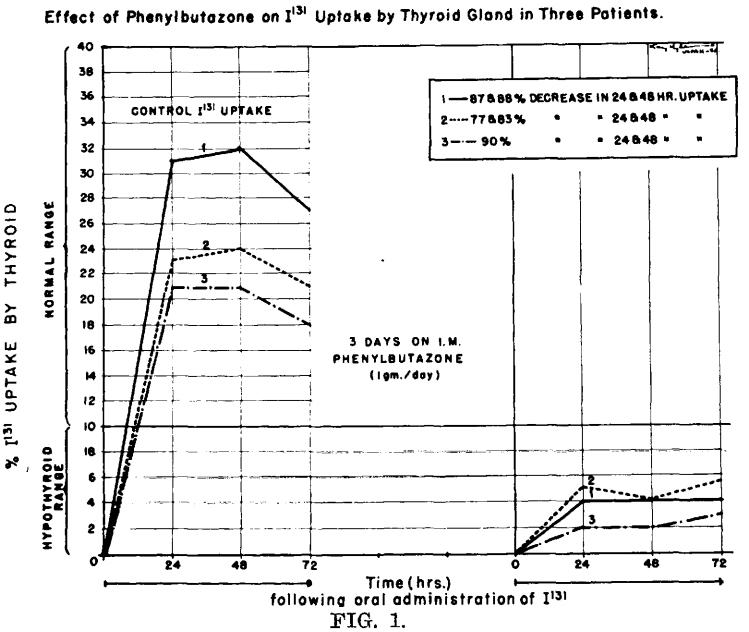

FIG. 1.

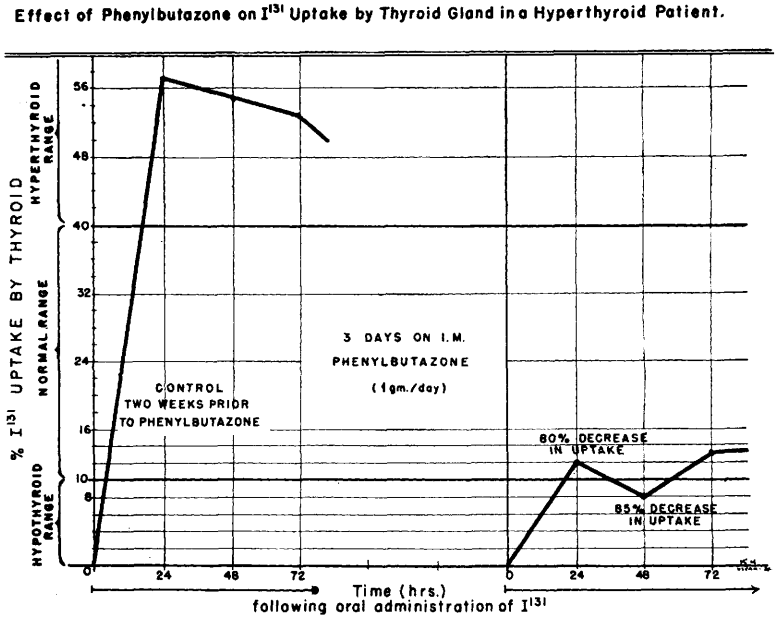

FIG. 2.

thyroid) butazolidin[R] interfered with uptake of I^{131} in the thyroid gland. The extent of this action is now being observed through a series of I^{131} uptakes during the continuous prolonged oral administration of butazolidin[R].

At the present time it may be stated that no instance of clinical hypothyroidism has been observed in our group of gout and arthritic patients, some of whom have been treated with the drug for as long as 12 months.

The mode of action of this compound on the thyroid was unknown at the time of these observations; however, possible mechanisms are suggested in another publication.†

Summary. The intramuscular injection of butazolidin[R] in a daily dose of 1.0 g for 2-3 days reduces I^{131} uptake by the thyroid gland.

† Effect of Butazolidin[R] upon the Fate of I^{131} in the Rat-I, Scott, Kenneth G., Frerichs, John B., and Reilly, William A.

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Effect of Pooling of Liver Slices upon Protein Synthesis in Guinea Pigs. (20052)

KINGSLEY M. STEVENS.* (Introduced by L. R. Kuhn.)
(With the technical assistance of Raymond J. Lichter and Bythel D. Dutton.)
From the Surgical Research Unit, Brooke Army Hospital, Fort Sam Houston, Texas.

Assuming the radiation emitted by S^{35}-methionine incorporated *in vitro* into liver protein to be x counts/min/unit in one animal, and y counts/min/unit in another, if the 2 livers were pooled, in equal units, a value of x + y/2 counts/min/unit would be expected. In the course of work involving guinea pigs, it was noted that pooled liver slices did not incorporate S^{35}-methionine at the rate expected from the samples singly; hence the following study was made. As will be shown, pooled values were consistently lower than theoretical values.

Materials and methods. Female guinea pigs

* Captain, Medical Corps, A.U.S.