In case of 18 hypothyroidism patients, less than 5 μg/dl was present in 94% by the former, all cases by the latter method.

3) The correlation between the two methods was as follows; r=+0.73 and P<0.01. A significant correlation was evident.

4) A simultaneous measurement was made with every examination by using Monitrol I (8.3 μg/dl) and Monitrol II (16.4 μg/dl), standard serum of known thyroxine contents. The results of both methods were compared with each other, and showed correct amounts of thyroxine.

**Comparison of Thyroid Gland Scintiphoto Using**

99mTc-Pertechnetate and 131I-Iodine

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Thyroid gland image using 99mTc-pertechnetate and 131I-iodine were compared in 62 patients. 131I-Iodine of 50 μCi to 150 μCi was administered and scintiphoto was obtained at 24 hours after oral administration. Then 99mTc-pertechnetate of 1 mCi to 5 mCi was administered and scintiphoto was obtained at 30 min. after injection.

Results:

1) 99mTc-pertechnetate and 131I-iodine scintiphoto usually gave equivalent results.

2) Scintiphoto could be obtained sooner because of high doses of 99mTc-pertechnetate owing to its life as well as its stay in the gland and good images were obtained on high or hypothyroidism.

3) Radiation doses to the gland of 99mTc-pertechnetate may be greatly decreased compared with 131I-iodine.

**Hemesynthetase Activity and Ferrokinetics in Hyperthyroidism**

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Hyperthyroid patients and rats with thyroid induced hyperthyroidism were used for measure of hemesynthetase activity and ferrokinetics.

Procedure:

1. Hemesynthetase activity was measured in bone marrow cells by counting radioactivity of 59Fe incorporation into hemin in the incubation mixture of the enzyme preparation, protoporphyrin, and the isotope (modification of Labbe’s method).

2. Plasma iron clearance was determined by measuring the rate of decline of radioactivity in blood (0.2 ml. in rat, 1 ml. in human) obtained 5, 60, 120, and 180 min. after intravenous injection of 59Fe (0.2 μCi in rat, 10 μCi in human). The degree of incorporation of iron into red blood cells, or iron utilization, was determined after intravenous injection of 59Fe. Each blood sample was obtained on intervals 1, 5, 10 days, and radioactivity was counted by well-type scintillation.
The rats were divided into three groups:
1. control group
2. group I (thyroxine was administered 300 μg per day for a week)
3. group II (thyroxine was administered 300 μg per day for two weeks)

Results:
1. Hemesynthetase activity in hyperthyroidism was as low as one sixth of normals.
2. Plasma iron disappearance half-time (PIDT 1/2) was as follows:
   - control: 97.0 ± 20.0 min.
   - group I: 104.0 ± 23.5 min.
   - group II: 64.7 ± 20.5 min.

PIDT 1/2 of group II was faster than control. These differences were statistically significant (P<0.01). But there was no significant difference group I and controls. Percentage of iron utilization was as follows:

   - Control: 82.1 ± 10.1%
   - group I: 85.4 ± 8.1%
   - group II: 88.3 ± 9.7%

These differences were not significant.

The Treatment of the Thyroid Cancer with Radioactive Iodine

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We reported our clinical examples in treating distant metastasis of the thyroid tumors with radioactive iodine. We treated 4 patients with radioactive iodine. Of the 4 patients, 1 had papillary adenocarcinoma, 1 had follicular carcinoma, 1 had trabecular carcinoma, and 1 had tublar adenoma (so-called malignant adenoma). Out of them, in 3 cases our treatment with radioactive iodine were effective on their X-ray films.

We consider that radioactive iodine is an important therapeutic agent in selected cases of metastatic thyroid cancer.

Tissue Concentration of ¹³¹I-Toluidine Blue in Rats and Dogs with Special Reference to the Parathyroid Concentrations by Intracardiac and Intravenous Administration

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Tissue concentration of ¹³¹I-toluidine blue was studied in rats and dogs after intracardiac and intravenous injection. The parathyroid-thyroid ratio and parathyroid-neck muscle ratio was significantly higher in rats only after intracardiac injection. Neither intracardiac nor intravenous injection of ¹³¹I-toluidine blue (including infusion) gave a high parathyroid-thyroid ratio in dogs as compared to intravenous injection in rats.