

ET<sub>3</sub> uptakes was not due to the effect of starvation on the erythrocyte.

The T<sub>4</sub> <sup>131</sup>I plasma clearance curve is presented in the Figure. The plasma clearance of radiothyroxine diminished with the initiation of starvation. The administration of TSH to the starved rat produced augmentation of the clearance rate toward that of the fed animals.

*Comment.* Marked structural alterations of the thyroid in the starved animal characterized by atrophy and flattening of the acinar epithelium with retention of colloid<sup>1,2,4,7</sup> have been described. Studies of radioiodide uptake by the thyroid of starved animals have led to apparently contradictory results; some investigators demonstrating an increased<sup>3,5,6</sup>, others diminished uptake<sup>4,5</sup>. In the present study, a marked augmentation of the 24 h <sup>131</sup>iodide uptake by the thyroid was demonstrated in acutely starved rats. These apparently contradictory results can be explained in the most part by alteration in the periods of starvation or variation in the time elapsed for determination of the radioiodide uptake. Studies in which <sup>131</sup>iodide uptake was determined 24 h following the administration of <sup>131</sup>iodide in starved animals<sup>3,7</sup> generally agree with the present findings. The augmentation of thyroid <sup>131</sup>I uptake coincident with starvation could be explained by a diminution in the iodide pool, altered renal clearance of iodide, reduced turnover of the iodide pool, alteration in TSH secretion or an increase in the enteric loss of thyroid hormones. Alteration in the enteric loss of T<sub>4</sub> <sup>131</sup>I was not found in the present study.

Increased 24 h thyroid <sup>131</sup>iodide uptake as well as increased thyroidal radioactivity of thyroxine suggest that the thyroid is concentrating iodine and producing hormone, but that there is altered release of the hormone in the starved animal.

Thyroid hormone release is under the control of TSH. Therefore, impaired release of thyroid hormones could be associated with a diminution of TSH. However, the increased radioiodine uptake and increased concentrations of thyroxine suggest that other mechanisms might be

operative. In the present study, the administration of TSH to starved animals did not completely abolish the thyroidal effect of starvation. Indeed, TSH produced an augmentation of the 24 h <sup>131</sup>I uptake with non-significant diminution in the thyroid concentration of triiodothyronine and thyroxine in the starved animal. TSH administration in the starved animal, did, however, alter the plasma T<sub>4</sub> clearance curve toward the slope demonstrated by the fed animals.

Although acute starvation produced an augmentation of the thyroid <sup>131</sup>I uptake, the circulating hormone was diminished<sup>4,7,8</sup>. The decrease in erythrocyte radiotriiodothyronine uptake demonstrated in the starved animal substantiates these prior reports. The administration of thyroid stimulating hormone produced an increase in the radiotriiodothyronine uptake of starved animals, but not to the level of the fed controls. This result is reflected in the oxygen consumption in starved TSH treated animals which increased but not to the level of the fed control.

*Résumé.* Après 96 h de jeûne, le rat consomme moins d'oxygène et ses erythrocytes moins de radiotriiodothyronine. La thyroïde de l'animal en état de jeûne absorbe davantage d'iode radioactif administré pendant 24 h et la concentration thyroïdienne en thyroxine est augmentée. Le jeûne ne modifie pas la perte intestinale de la radiothyroxine. L'administration de TSH ne rétablit pas complètement la fonction thyroïdienne, bien que la courbe de la 'clearance' plasmatique de la radiothyroxine des rats affamés se rapproche alors de celle observée après l'administration de TSH chez les animaux nourris normalement.

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## CONGRESSUS

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