

mentre nelle tabelle III e IV sono riunite le medie calcolate sugli stessi dati.

Tabella III
Ratti normali

| Tempo dal pasto h | Azoto non proteico | | | |
|----------------------|----------------------------------|----------------|--------------|---------------|
| | Sangue mg/100 cm ³ | Cervello g% | Fegato g% | Muscolo g% |
| 5 | 45,6 | 0,161 | 0,180 | 0,291 |
| 24 | 44,6 | 0,165 | 0,170 | 0,290 |

Tabella IV
Ratti in avitaminosi

| Tempo dal pasto h | Azoto non proteico | | | |
|----------------------|----------------------------------|----------------|--------------|---------------|
| | Sangue mg/100 cm ³ | Cervello g% | Fegato g% | Muscolo g% |
| 5 | 51,3 | 0,205 | 0,206 | 0,349 |
| 24 | 39,3 | 0,167 | 0,177 | 0,300 |

Dai dati delle tabelle I, II, III, IV risulta che, mentre negli animali normali l'A.N.P. del sangue e dei tessuti (cervello, fegato, muscolo) non presenta differenze 5 ore dopo il pasto e 24 ore dopo il pasto, come già noto (VAN SLVKE), negli animali in avitaminosi, invece, il contenuto dell'A.N.P. nel sangue e nei tessuti 5 ore dopo il pasto è sempre significativamente più elevato del contenuto dopo 24 ore il quale, in valore assoluto, coincide praticamente con i valori delle 5 e 24 ore degli animali normali. Questo aumento dell'A.N.P. nel sangue e nei tessuti inerente all'apporto alimentare può essere espressione di una ridotta capacità dei tessuti a fissare l'N alimentare e quindi di una rallentata sintesi protidica.

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Summary

In avitaminosis B₁ (rats) the N.P.N. (non-protein nitrogen) of the blood and tissues (brain, liver, muscles) five hours after a meal is always higher than that of the controls. 24 hours after a meal, N.P.N. is reduced to normal values, i.e. equal to controls.

This behaviour may be interpreted as an expression of a reduced power of the tissues to fix food nitrogen and consequently of a retarded protein synthesis.

Influence of Thyroid Status on Body Growth

The functions of the thyroid during growth could be better understood, if it could be quantitatively expressed in terms of the amount of thyroxine, secreted by the thyroid gland. As the thyroxine secretion rate/100 g body weight decreases, with advancing age (MAQSOOD, 1950¹), it was decided to find out the levels of thyroidal stimulation which would accelerate growth rate in the male rabbit and the ram. Should a constant dose of

thyroxine be administered throughout the growth period or should the dosage levels be increased or decreased in accordance with the rate of thyroxine secretion in various species of animals, needed further investigations. With these objects in view, it was decided to administer known quantities of either thyroidal materials or goitrogens or both for varying periods, keeping in mind the estimated thyroxine secretion rate for that particular age group, in order to study the influence of thyroid status on growth in the young male rabbit.

Administration of L-thyroxine in amounts about 30 to 50 per cent above the estimated normal thyroxine secretion rate for a period of four weeks, significantly accelerated growth rate in the young male rabbit at different ages. In long term experiments growth stimulation was obtained by reducing the dosage of exogenous thyroxine corresponding to the observed decline in the thyroxine secretion rate, with advancing age, thereby maintaining the thyroxine level within the optimal physiological limits in the young male rabbit. Growth retardation was observed in the rabbit by greatly increasing the dosage of thyroprotein with advancing age. Administration of thyroxine in doses below or equal to the estimated normal thyroxine secretion rate did not affect the body weight gains in the rabbit. Mild thyroidal stimulation significantly accelerated the growth rate in the young ram. Factors like age and season influenced the response of the body towards exogenous thyroxine.

Administration of thiouracil retarded body growth in the young male rabbit and the ram. The decrease in the body weight gain was more marked in younger than in mature rabbits. Thyroidectomy performed in the newly born male rabbit also markedly retarded body growth. The growth retarding effect of thiouracil-treatment was checked by the simultaneous administration of thyroxine in doses equal to the estimated thyroxine secretion rate in the growing male rabbit.

In general, it can be concluded that thyroidal stimulation within the physiological limits accelerated body growth while thyroidal inhibition markedly arrested body growth in the young male mouse¹ rabbit and the ram. The work will be published elsewhere.

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Zusammenfassung

Optimale Reizung der Thyreodea innerhalb physiologischer Grenzen beschleunigte das Körperwachstum beim jugendlichen männlichen Kaninchen und beim Schafbock in verschiedenen Altersstufen. Eine Wachstumsbeschleunigung ließ sich über längere Zeit auch erhalten, wenn die Dosierung der exogenen Schilddrüsenstoffe mit zunehmendem Alter herabgesetzt wurde. Damit wurde die Thyroxinkonzentration innerhalb physiologischer Grenzen gehalten. Ein durch Thiouracil hervorgerufener Hypothyreoidismus hemmte das Körperwachstum beim jugendlichen männlichen Kaninchen und beim Schafbock.

¹ M. MAQSOOD and E. P. REINEKE, Amer. J. Physiol., 160, 253 (1950).

¹ M. MAQSOOD, Nature (London) 166, 735 (1950).