

Thyroidal contributors to the epigenetic expression of obesity in the LA/Ntul//cp rat.**Orien L Tulp**

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To assess parameters of thyroidal function in obesity, groups of congenic lean and obese LA/Ntul//cp rats were subjected to measures of fasting and fed T4, 5' deiodinase activity in liver in liver and other tissues, studies of the half-life (T1/2) of T4, daily administration of T4 and T3, and nuclear T3 receptor binding affinity in liver and kidney tissues affinity were determined. Body weights and weight gains of the obese phenotype were significantly greater than their lean littermates from age of weaning. Measures of resting oxygen consumption (VO2) and plasma T3 concentrations of lean > obese phenotype throughout adulthood in the lean phenotype and the thermic and thyroidal responses to diet and environment were impaired in the obese phenotype. The plasma half-life of T4 in obese rats was increased by 50% in obese vs lean rats. Administration of therapeutic doses of T3 but not T4 resulted in weight loss in the obese phenotype, but switching the T3 to T4 was followed by rapid weight gain in the obese phenotype. Nuclear T3 binding sites were similar in both lean and obese animals, but T3 receptor binding affinity was decreased in the obese phenotype. The capacity for T4-5' deiodinase activity of obese rats was decreased in liver and kidney, but was increased in the Interscapular brown adipose tissue of obese rats. Thus, the results of these studies are consistent with impaired nuclear T3 receptor affinity and T3 mediated metabolic sequelae in the obese phenotype of this rat strain and suggest atypical nuclear T3 receptor actions as a likely contributor to the epigenetic expression of obesity in the obese phenotype of this strain.

Biography

Dr Orien Tulp is Professor and President of the University of Science Arts and Technology, Montserrat, British West Indies. He is an accomplished investigator and author of over 500 manuscripts book chapters and abstracts primarily in the areas of nutrition, endocrinology and metabolism, with secondary interests in infectious diseases.