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INFLUENCE OF SELECTED AMINO ACID DEFICIENCIES ON
SOMATOMEDIN AND GLYCOSAMINGLYCAN METABOLISM

by

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To

My parents and sister whose love, encouragement and
sacrifices made my education possible.

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INTRODUCTION

Normal growth depends upon the regulated influence of both hormonal and nutritional factors, though nutrition perhaps, could be singled out as the most important factor affecting growth. Malnutrition is frequently associated with growth retardation, but the exact mechanism for the growth failure has not been clearly established.

Historical Perspective

One of the classical discoveries in the field of endocrinology has been the growth-promoting activity of the anterior part of the pituitary gland. Growth hormone, of pituitary origin, has been recognized for over 50 years as a factor critically important for growth (1). Disorders of growth are the most common problems relating to the skeletal system encountered in children. By the use of purified preparations and treatment of growth hormone-deficient animals (2) or children (3), growth hormone, in vivo, has been shown to promote skeletal growth. This is done largely through proliferation of growth cartilage at the epiphyseal plates of long bones (2). However, accumulating evidence has shown that growth hormone itself does not stimulate linear growth, but rather induces the formation of a secondary growth-promoting factor, or factors.

In recent years, rapid progress has been made in characterizing this growth factor. In studying the mechanism by which growth hormone promotes growth, Salmon and Daughaday (4) made the first observations that the effect of growth hormone on the growth of skeletal tissue is through a biologically active factor. This substance had originally been termed