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Pathophysiological Mechanisms Leading to Muscle Loss in Chronic Kidney Disease

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The worldwide prevalence of chronic kidney disease (CKD) is high and growing, making CKD a leading causes of mortality. Skeletal muscle wasting, sometimes called sarcopenia or protein energy wasting, is a frequent, serious consequence of CKD that reduces muscle strength and function, diminishes the quality of life of patients, and raises their risk of co-morbidities and death. Muscle atrophy results from a disturbance in muscle protein balance that results from an increase in the rate of protein degradation, a decrease in the rate of protein synthesis, or both. Development of therapeutic strategies to minimize muscle loss, or even maintain muscle mass, are challenging because of the multifactorial nature of the signals that increase protein degradation or suppress protein accretion. This review will discuss the cellular signals and mechanisms that negatively alter protein turnover in skeletal muscle during CKD.

Keywords: CKD, skeletal muscle, sarcopenia, protein energy wasting, pathophysiology