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The new endocrine role of skeletal muscle myokines

There has been a recent change in the way scientists understand skeletal muscle functions. It is not only a tissue that generates force and movement, but a one that regulates its own functions and others by means of myokines secretion. Myokines are small peptides or proteins with autocrine, paracrine and endocrine functions. Some of them have long been known, such as cytokines and growth factors, but others are new such as musclin, myostatin, myonectin, apelin and irisin. They are regulated by exercise, muscle fiber type, caloric intake and several humoral stimuli. Their structure and receptors are now being sought. These molecules have regulatory effects on immune (inflammation), metabolic (insulin resistance/sensitivity and fat metabolism) and cardiovascular (blood pressure and angiogenesis) systems. They are important to understand the complex crosstalk between muscle-exercise-adaptations and muscle-sedentarism-chronic diseases. New myokines as well as their regulation and functions are likely to be discovered in the near future. Also, their therapeutic use is expected. Our research groups (PHYSIS and GRINMADE) have been exploring the relationships between muscle mass, fiber types and myokines in several populations in Colombia. We have found a protective effect of thigh muscle mass on metabolic disease, but not a direct relationship between musclin and insulin resistance in patients with metabolic syndrome. Preliminary results also show a regulation of musclin by a high intensity exercise bout in these patients. In conclusion, the skeletal muscle works too as an endocrine organ, whose study will help us understand the pathophysiology of some chronic diseases and also envision diagnostic and therapeutic tools to tackle them.

Biography

Juan C Calderon is a Medical Doctor, completed his PhD in Physiology, devoted to understand different functions of skeletal muscle. His work has been related to excitation-contraction coupling, calcium signaling and muscle fatigue.

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