

Incretin-Based Therapies: A Promising Approach for Modulating Oxidative Stress and Insulin Resistance in Sarcopenia

Abstract:

Background: Recent studies have linked sarcopenia development to the hallmarks of diabetes, oxidative stress, and insulin resistance. The anti-oxidant and insulin sensitivity enhancing effects of incretin-based therapies may provide a promising option for the treatment of sarcopenia. This review aimed to unveil the role of oxidative stress and insulin resistance in the pathogenesis of sarcopenia and explore the potential benefits of incretin-based therapies in individuals with sarcopenia.

Methods: PubMed, the Cochrane Library, and Google Scholar databases were searched by applying keywords relevant to the main topic, to identify articles that met our selection criteria.

Results: Incretin-based therapies manifested anti-oxidant effects by increasing the anti-oxidant defense system and decreasing free radical generation or by indirectly minimizing glucotoxicity, which was mainly achieved by improving insulin signaling and glucose homeostasis. Likewise, these drugs exhibit insulin-sensitizing activities by increasing insulin secretion, transduction, and β -cell function or by reducing inflammation and lipotoxicity.

Conclusions: Incretin-based therapies, as modulators of oxidation and insulin resistance, may target the main pathophysiological factors of sarcopenia, thus providing a promising strategy for the treatment of this disease.