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Clinical and toxicological effects of GLP-1 agonists

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Abstract

Background: Glucagon-like peptide-1 receptor (GLP-1) agonists have been investigated and applied for the treatment of type 2 diabetes mellitus (T2DM) and obesity due to their ability to increase glucose-dependent insulin secretion. However, due to their recent therapeutic use, less is known in what concerns the long-term toxicological effects of these medicines. **Objective:** Herein, we compiled the available information on the clinical and toxicological effects of GLP-1 agonists. **Methods:** A literature search was carried out in PubMed (U.S. National Library of Medicine) to find relevant articles dealing with the clinical and toxicology effects of GLP-1 agonists, without a limiting period and placing a special focus on clinical studies. **Results:** All GLP-1 agonists increase hyperglycaemia-induced insulin secretion, suppressing glucagon secretion in hyperglycaemia or euglycaemia, slowing down gastric empty, preventing large post-meal glycaemic increments, and reducing caloric intake and body weight [1]. In addition, GLP-1 agonists are claimed to have pleiotropic effects on the cardiovascular system, which might be of particular relevance for patients with T2DM and/or obese, as these individuals are at increased cardiovascular disease risk and display poorer recover from cardiovascular deleterious events, compared to controls [2]. GLP-1 agonists seem to have side effects on pancreas and thyroid, but current evidence does not show a cause-effect association between these drugs and the development of pancreatitis, pancreatic cancer, or thyroid cancer. The use of these drugs, mainly exenatide, has been associated with acute kidney injury, as well as local reactions in injection site [3]. **Conclusions:** GLP-1 agonists are a newly and widely recommended class of glucose-lowering agents with the ability to lower plasma glucose comparable to insulin regimens, but with a lower risk of hypoglycaemia and the added benefit of weight loss. More clinical trials and pharmacovigilance information are however needed to clarify the cardiovascular and overall safety profile of GLP-1 agonists.

Keywords: type-2 diabetes mellitus (T2DM); obesity; cardiovascular effects

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