

The Effects of Glucagon-Like Peptide-1 Receptor Agonists and Dipeptidylpeptidase-4 Inhibitors on Blood Pressure and Cardiovascular Complications in Diabetes

Habib Yaribeygi

Semnan University of Medical Sciences, Iran

Copyright: 2021 Yaribeygi H. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Glucagon-like peptide-1 receptor (GLP-1R) agonists are a class of newly introduced antidiabetic medications that potentially lower blood glucose by several molecular pathways. DPP-4 inhibitors are the other type of novel antidiabetic medications which act by preventing GLP-1 inactivation and thereby increasing the activity levels of GLP-1, leading to more glucose-induced insulin release from islet β -cells and suppression of glucagon release. Most patients with diabetes have concurrent hypertension and cardiovascular disorder. If antihyperglycemic agents can attenuate the risk of hypertension and cardiovascular disease, they will amplify their overall beneficial effects. There is conflicting evidence on the cardiovascular benefits of GLP-1R induction in laboratory studies and clinical trials. In this study, we have reviewed the main molecular mechanisms by which GLP-1R induction may modulate the cardiovascular function and the results of cardiovascular

outcome clinical trials.

The global incidence of diabetes mellitus is growing rapidly. This chronic disorder is accompanied by metabolic derangements and activation of various pathophysiologic pathways leading to tissue dysfunction. Nowadays, diabetes complications are a leading cause of disability and mortality, especially in the elderly worldwide. Hence, various therapeutic guidelines and antidiabetic agents have been developed for normalising blood glucose and preventing diabetes-related complications. Diabetes complications are classified mainly as microvascular and macrovascular complications, both of which are worsened by hemodynamic variations and increased blood pressure (BP).

Moreover, it is well established that hypertension coexists in a significant proportion of patients with diabetes. Hence, if an antidiabetic medication modulates hemodynamic changes and normalises hypertension, it can be more beneficial against diabetes-related complications. While we have some evidence about the effects of classic antidiabetic agents on hemodynamic variations, there is not much literature about antihyperglycemic medications. Therefore, in this current study, we present the latest evidence about glucagon-like peptide-1 receptor agonists (GLP-1RA) and dipeptidylpeptidase-4 inhibitors (DPP-4i), which are a relatively newer class of antihyperglycemic agents on hypertension in the diabetic milieu.

NOTE: This work is partly presented at 8th International Conference on World NO Diabetes and Obesity Congress at July 10-11, 2019 | London, UK