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Wnt Ligands' Complicated Role in Type 2 Diabetes

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Abstract

One of the major chronic diseases, type 2 diabetes mellitus (T2DM) can cause a variety of serious complications and is on the rise worldwide. Wnt ligands (Wnts) and the Wnt signaling pathways that activate Wnts are tightly regulated in a number of processes that are crucial to the onset and progression of T2DM and its complications. Due to the many Wnt family members and the conflicting effects of activating the canonical and/or non-canonical Wnt signaling pathways, our understanding of their roles in these diseases is, however, very basic.

Keywords: Specimens • Epilepsy • Syndromes • Sisodiya

Introduction

Diabetes is currently one of the most significant metabolic diseases in the world. It is characterized by chronic hyperglycemia and is brought on by a lack of insulin secretion or resistance to insulin. Diabetes patients are more likely to develop a series of acute metabolic complications, such as diabetic ketoacidosis, as well as chronic vascular complications (angiopathy), including microvascular diseases like diabetic retinopathy (DR), diabetic peripheral neuropathy (DPN), diabetic nephropathy (DN), and diabetic foot, and macrovascular diseases like cardiovascular disease that manifests as myocardial infarction and cerebrovascular disease that results in strokes.1, 2 The prevalence and incidence rate of diabetes In 2019, diabetes was the cause of 4.2 million deaths and accounted for 10% of adults' total health care costs. To make matters worse, approximately 79% of adults with diabetes live in developing nations and approximately 50% of diabetics have not been diagnosed. The most common types of diabetes are gestational diabetes mellitus (GDM), type 2 diabetes mellitus (T2DM), and type 1 diabetes. T2DM is the most prevalent type and accounts for more than 90% of all cases of diabetes.3 It is commonly believed that insulin resistance is the first cause of T2DM, whereas dysfunction of pancreatic -cells is the determining factor.4, 5 There is currently no cure for T2DM; the treatment's main focus is on lowering insulin resistance and encouraging the pancreas to secrete more insulin. In order to improve treatment, it is urgent to discover the T2DM's underlying pathogenic mechanisms.

T2DM is thought to be a complex polygenetic disease because of the interaction between hereditary predisposition and multiple acquired disposition; the aetiology of T2DM has not been fully understood. the latter of which includes risk factors like obesity, a poor diet, inactivity, advancing age, and high blood pressure.6, 7 The abnormalities in numerous important signaling transduction pathways are crucial to the onset and progression of T2DM and its complications.8, 11 Among these, Wnt signaling pathways draw more attention due to their crucial role in embryogenesis and tissue homeostasis, as well as their well-known role in the pathogenesis of multiple human diseases, particularly cancers.12, 14 The Due to the numerous components and resulting intricate networks, the role of Wnt pathways in the pathogenesis of T2DM and related complications appears to be contradictory; sometimes they function as protectors, while their activation is simultaneously required for the development of these disorders, and our understanding of their relationship is still quite rudimentary. Therefore, for a more effective therapeutic effect, a deeper comprehension of their relationship will be beneficial. [1].

Description

A significant part of the pathogenetic basis for a number of human diseases, including T2DM and its complications, is dysregulation of Wnt signaling pathways. Mechanistic understanding of Wnt signaling pathways in these diseases has made remarkable progress in recent decades. While the canonical Wnt pathway that is activated by the majority of Wnts is either protective or deleterious depending on the context, the function of the non-canonical Wnt pathways that are activated by few Wnts is consistent in diabetic-related diseases. Furthermore, it is impossible to produce a therapeutic effect on these diseases by silencing or activating Wnt pathways alone. The studies were divided into five categories based on the technology used for intra-operative margin evaluation: 'Frozen Section Analysis,' 'Fluorescence,' 'Optical Imaging,' 'Conventional Imaging Techniques,' and 'Cytological Assessment.' The following data were extracted from the included studies: Margin assessment technology, whether margins were assessed on the remaining defect after tumour removal, at the resection surface of the specimen, or if the tumour was evaluated in situ, verification method, definition of positive margin, sample size, tumour site, technology accuracy, or sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV), or a different outcome measure, acquisition time, and sampling [2].

A systematic review on intraoperative margin assessment was recently published, emphasising the need for more research to improve the accuracy of techniques to reduce positive margins. However, no distinction was made between mucosal and deep margins. Technologies for intraoperative margin assessment must distinguish between healthy and tumour tissue. Healthy mucosal tissue differs from healthy tissue found at the deep margin, necessitating a different approach [3-5].

Conclusion

As a result, a thorough comprehension of the activation mechanisms and interactions of canonical and non-canonical Wnt pathways in specific tissues and time windows during the onset and progression of diabetic-related diseases is essential. All human Wnts, their main antagonists (sFRPs and WIF-1) and coreceptor (LRP6), and their role in the development of T2DM and related complications are systematically summarized in this review. We also discuss the main obstacles currently in the way of developing novel therapeutic approaches that target Wnts for the treatment of these disorders. Wnts may be potential therapeutic targets for the treatment and prevention of diabetic-related diseases if their functions are fully understood.

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Conflict of Interest

There are no conflicts of interest by author.

References

1. Lockhart, S. R., M. Toda, K. Benedict and D. H. Caceres, et al. "Endemic and other dimorphic mycoses in the Americas. *J Fungi* 7 (2021):151.
2. Messina, Fernando A., Marcelo Corti, Ricardo Negroni and Alicia Arechavala, et al. "Histoplasmosis in AIDS patients without tegumentary manifestations." *Rev Chil Infectol* 35 (2018): 560-565.
3. Azar, Marwan M, and Chadi A. Hage. "Laboratory diagnostics for histoplasmosis." *J Clin Microbiol* 55 (2017): 1612-1620.
4. Cáceres, Diego H., Beatriz L. Gómez, Angela M. Tobón and Tom M. Chiller, et al. "Evaluation of a Histoplasma antigen lateral flow assay for the rapid diagnosis of progressive disseminated histoplasmosis in Colombian patients with AIDS." *Mycoses* 63 (2020): 139-144.
5. Samayoa, B., L. Aguirre, O. Bonilla and N. Medina, et al. "The diagnostic laboratory hub: A new health care system reveals the incidence and mortality of tuberculosis, histoplasmosis, and cryptococcosis of PWH in Guatemala." *Forum Infect Dis* 7(2020).

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