IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, October 2025
Impact Factor: 7.67

Teneligliptin in Type 2 Diabetes Mellitus: A Comprehensive Review

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Abstract: *Type 2 diabetes mellitus (T2DM) represents a global health challenge characterized by progressive βcell dysfunction and insulin resistance. Dipeptidyl peptidase-4 (DPP-4) inhibitors have emerged as an important therapeutic class for managing T2DM by enhancing incretin hormone activity. Teneligliptin, a novel DPP-4 inhibitor with unique structural features, offers distinct pharmacological advantages including prolonged half-life, minimal renal excretion, and sustained enzyme inhibition. This comprehensive review examines the molecular pharmacology, clinical efficacy, safety profile, and therapeutic positioning of teneligliptin in contemporary diabetes management. Evidence from randomized controlled trials demonstrates that teneligliptin effectively reduces glycated hemoglobin (HbA1c) levels, improves postprandial glucose control, and exhibits favorable tolerability with low hypoglycemia risk. The drug's unique pharmacokinetic profile allows for flexible dosing in patients with renal or hepatic impairment, addressing an important unmet need in special populations. This review synthesizes current evidence on teneligliptin's mechanism of action, comparative effectiveness, cardiovascular safety, and place in therapy, providing clinicians with a comprehensive understanding of this therapeutic option for individualized T2DM management.*

Keywords: Teneligliptin, Type 2 Diabetes Mellitus, DPP-4 inhibitor, Incretin therapy, Glycemic control, Antidiabetic agents

DOI: 10.48175/IJARSCT-29254