

REVIEWS

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Beyond blood sugar: exploring the anti-inflammatory frontier of antidiabetic medications to alleviate diabetic complications

Abstract

Background and objective. Inflammation is closely correlated with diabetes and diabetic complications. Research has shown that individuals with diabetes exhibit an upregulation of circulatory proinflammatory cytokines, resulting in a chronic state of low-grade inflammation. The participation of inflammation in the pathogenesis of diabetic complications, particularly cardiovascular and renal complications, is well-established. Targeting inflammation may produce prominent effects in improving the clinical condition of diabetic patients, reducing the progression of complications, and promoting glucose uptake by insulin-sensitive tissues. This review article aimed to explore the anti-inflammatory effect of antidiabetics beyond their hypoglycemic action and the potential effects of such antidiabetics in reducing diabetic complications.

Materials and methods. Based on relevant online publications using the terms anti-diabetics, anti-inflammatory, diabetic complications, and inflammatory mediators up to February 2024 on PubMed and Google Scholar were utilized to construct this review.

Results. The majority of antidiabetic drugs pose an indirect effect on inflammation through the hypoglycemic effect. However, many antidiabetics have an additional anti-inflammatory mechanism independently of their hypoglycemic effects, which augments their anti-inflammatory effects.

Conclusion. Suppression of the inflammatory response by anti-diabetics and achieving homeostatic control is an effective approach for preventing diabetic complications.