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Medicinal Potential of Isoflavonoids: Polyphenols That May Cure Diabetes

(Review) (Open Access)

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Abstract

In recent years, there is emerging evidence that isoflavonoids, either dietary or obtained from traditional medicinal plants, could play an important role as a supplementary drug in the management of type 2 diabetes mellitus (T2DM) due to their reported pronounced biological effects in relation to multiple metabolic factors associated with diabetes. Hence, in this regard, we have comprehensively reviewed the potential biological effects of isoflavonoids, particularly biochanin A, genistein, daidzein, glycitein, and formononetin on metabolic disorders and long-term complications induced by T2DM in order to understand whether they can be future candidates as a safe antidiabetic agent. Based on in-depth in vitro and in vivo studies evaluations, isoflavonoids have been found to activate gene expression through the stimulation of peroxisome proliferator-activated receptors (PPARs) (α, γ), modulate carbohydrate metabolism, regulate hyperglycemia, induce dyslipidemia, lessen insulin resistance, and modify adipocyte differentiation and tissue metabolism. Moreover, these natural compounds have also been found to attenuate oxidative stress through the oxidative signaling process and inflammatory mechanism. Hence, isoflavonoids have been envisioned to be able to prevent and slow down the progression of long-term diabetes complications including cardiovascular disease, nephropathy, neuropathy, and retinopathy. Further thoroughgoing investigations in human clinical studies are strongly recommended to obtain the optimum and specific dose and regimen required for supplementation with isoflavonoids and derivatives in diabetic patients.

SciVal Topic Prominence ⓘ

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