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## LA BERBÉRINE INHIBE LA PATHOGENÈSE DU DIABÈTE DE TYPE 2

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### The Pathogenesis of Diabetes Mellitus by Oxidative Stress and Inflammation: Its Inhibition by Berberine.

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#### Abstract

A substantial knowledge on the pathogenesis of diabetes mellitus (DM) by oxidative stress and inflammation is available. Berberine is a biologically active botanical that can combat oxidative stress and inflammation and thus ameliorate DM, especially type 2 DM. This article describes the potential of berberine against oxidative stress and inflammation with special emphasis on its mechanistic aspects. In diabetic animal studies, the modified levels of proinflammatory cytokines and oxidative stress markers were observed after administering berberine. In renal, fat, hepatic, pancreatic and several others tissues, berberine-mediated suppression of oxidative stress and inflammation was noted. Berberine acted against oxidative stress and inflammation through a very complex mechanism consisting of several kinases and signaling pathways involving various factors, including NF- $\kappa$ B (nuclear factor- $\kappa$ B) and AMPK (AMP-activated protein kinases). Moreover, MAPKs (mitogen-activated protein kinases) and Nrf2 (nuclear factor erythroid-2 related factor 2) also have mechanistic involvement in oxidative stress and inflammation. In spite of above advancements, the mechanistic aspects of the inhibitory role of berberine against oxidative stress and inflammation in diabetes mellitus still necessitate additional molecular studies. These studies will be useful to examine the new prospects of natural moieties against DM.

**KEYWORDS:** cytokines; diabetes mellitus; inflammation; oxidative stress; pathogenesis; signaling pathways

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*“Des connaissances substantielles sur la pathogenèse du diabète sucré par le stress oxydant et l’inflammation sont disponibles. La **berbérine** est un phytonutriments biologiquement actif capable de lutter contre le stress oxydant et contre l’inflammation, et donc d’améliorer le diabète sucré, en particulier le diabète de type 2. Cet article décrit le potentiel de la **berbérine** pour agir contre le stress oxydant et contre l’inflammation, en mettant spécialement l’accent sur ses aspects mécanistiques. Lors d’études sur des animaux diabétiques, des modifications des taux de cytokines pro-inflammatoires et de marqueurs du stress oxydant ont été observées après administration de **berbérine**. Dans les tissus rénaux, adipeux, hépatiques, pancréatiques ainsi que dans plusieurs autres tissus, on a constaté une suppression du stress oxydant et de l’inflammation grâce à l’action de la **berbérine**.”*