Dihydroquercetin (DHQ) is a flavonoid in the Chinese traditional herbal medicine Ramulus Euonym

Pretreatment with dihydroquercetin, a dietary flavonoid, protected against concanavalin A-induced immunological hepatic injury in mice and TNF-α/ActD-induced apoptosis in HepG2 cells

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Abstract

We have previously demonstrated the hepatoprotective effect of dihydroquercetin (DHQ) against concanavalin A (Con A)-induced immunological hepatic injury in mice. In this study, we investigated the immunoregulatory effects of DHQ on Con A-induced liver injury in mice. DHQ administration significantly decreased the serum levels of alanine transaminase and aspartate transaminase, effectively prevented liver damage, and increased the survival rate of Con A-treated mice. Immunohistochemistry examination revealed that supplementation with DHQ obviously reduced infiltration of $CD4^+$ and $CD8^+$ T cells in the injured liver tissues. Furthermore, DHQ administration resulted in down-regulation of pro-inflammatory cytokines (TNF-α, IFN-γ, IL-2, IL-4, and IL-10), the chemokine osteopontin, apoptosis factors (Fas and FasL), transcription factors that regulate Th cell differentiation (T-bet and GATA-3), perforin, granzyme B, and inducible nitric oxide synthase (iNOS). *In vitro*, treatment with DHQ protected HepG2 cells against TNF-α/ActD-induced apoptosis by inhibiting the activation of caspase-3, caspase-7, and caspase-8. In addition, DHQ reduced phosphorylation of NF-kB/p65, and inhibited the expressions of pro-apoptotic factors (p53 and Bax), while it up-regulated the expression of the anti-apoptotic factor Bcl-2. Our findings suggest that the immunosuppressive effects of DHQ ameliorated Con A-mediated immunological liver injury by reducing the expression of pro-inflammatory mediators and infiltration of $CD4^+$ and $CD8^+$ T cells in liver tissues, and DHQ protected HepG2 cells against TNF-α/ActD-induced apoptosis possibly *via* modulation of the caspase and NF-kB pathways.

Virus-inhibiting activity of dihydroquercetin, a flavonoid from Larix sibirica, against coxsackievirus B4 in a model of viral pancreatitis

- Anastasia V. Galochkina, Vadim B. Anikin, +2 authors Vladimir V. Zarubaev
- Published 2016 in Archives of Virology
- DOI:10.1007/s00705-016-2749-3

Members of the family Picornaviridae, in particular, enteroviruses, represent a serious threat to human health. They are responsible for numerous pathologies ranging from mild disease to fatal outcome. Due to the limited number of safe and effective antivirals against enteroviruses, there is a need for search and development of novel drugs with various mechanisms of activity against enteroviruses-induced pathologies. We studied the effect of dihydroquercetin (DHQ), a flavonoid from larch wood, on the course of pancreatitis of white mice caused by coxsackievirus B4 (CVB4). DHQ was applied intraperitoneally at doses of 75 or 150 mg/kg/day once a day for 5 days postinfection (p.i.) starting on day 1 p.i., and its effect was compared to that of the reference compound ribavirin. The application of DHQ resulted in a dose-dependent decrease in the virus titer in pancreatic tissue, reaching, at the highest dose, 2.4 logs on day

5 p.i. Also, the application of DHQ led to restoration of antioxidant activity of pancreatic tissue that was impaired in the course of pancreatitis. Morphologically, pancreatic tissue of DHQ-treated animals demonstrated less infiltration with inflammatory cells and no signs of tissue destruction compared to placebo-treated mice. Both ribavirin- and DHQ-treated animals developed fewer foci of pancreatic inflammation per mouse, and these foci contained fewer infiltrating cells than those in placebo-treated mice. The effect of DHQ was comparable to or exceeded that of ribavirin. Taken together, our results suggest high antiviral activity of DHQ and its promising potential in complex treatment of viral pancreatitis. LESS

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Предполагаемый способ действия дигидрокверцетина, фракция лекарственного растения деодар (Cedrus deodara), оценивалась по иммунному статусу морского окуня (Sparus aurata L.). Рыбу елили на 4 группы, а затем кормили в течение 14 дней с добавлением 0% (контроль), 0,1%, 0,5% и 1% дигидрокверцетина. Результаты показывают, что низкие концентрации дигидрокверцетина, как пищевой добавки способны повышать иммунный статус дорады - морского окуня. Добавляли в стандартный корм для дорады (ферма - Мурсия, Испания). Лучшие результат показала дозировка ДГК = 0.1% в стандартном корме.