عنوان مقاله:

Saroglitazar ameliorates monosodium glutamate-induced obesity and associated inflammation in Wistar rats: Plausible role of NLRP۳ inflammasome and NF- κB

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نویسندگان:

Sayima Nabi - *Department of Pharmacology, School of Pharmaceutical Education & Research (SPER), Jamia Hamdard, (UGC approved deemed to be University, Govt. of India), New Delhi–۱۱۰۰۶۲, India*

Uma Bhandari - *Department of Pharmacology, School of Pharmaceutical Education & Research (SPER), Jamia Hamdard, (UGC approved deemed to be University, Govt. of India), New Delhi–۱۱۰۰۶۲, India*

Syed Haque - *Department of Pharmacology, School of Pharmaceutical Education & Research (SPER), Jamia Hamdard, (UGC approved deemed to be University, Govt. of India), New Delhi–۱۱۰۰۶۲, India*

خلاصه مقاله:

Objective(s): Inflammation is the major progenitor of obesity and associated metabolic disorders. The current study investigated the modulatory role of saroglitazar on adipocyte dysfunction and associated inflammation in monosodium glutamate (MSG) obese Wistar rats.Materials and Methods: The molecular docking simulation studies of saroglitazar and fenofibrate were performed on the ligand-binding domain of NLRP۳ and NF- κB. Under in vivo study, neonatal pups received normal saline or MSG (۴ g/kg, SC) for ۷ alternate days after birth. After keeping for ۴۲ days as such, animals were divided into seven groups: Normal control; MSG control; MSG + saroglitazar (۲ mg/kg); MSG + saroglitazar (۴ mg/kg); saroglitazar (۴ mg/kg) per se; MSG + fenofibrate (۱۰۰ mg/kg); fenofibrate (۱۰۰ mg/kg) per se. Drug treatments were given orally, from the ۴۲nd to ۷۰th day. On day ۷۱, blood was collected and animals were sacrificed for isolation of liver and fat pads. Results: In silico study showed significant binding of saroglitazar and fenofibrate against NLRP۳ and NF- κB. Saroglitazar significantly reduced body weight, body mass index, Lee's index, fat pad weights, adiposity index, decreased serum lipids, interleukin-۱β (IL-۱β), tumor necrosis factor-α(TNF-α), interleukin-۶ (IL-۶), leptin, insulin, blood glucose, HOMA-IR values, oxidative stress in the liver and increased hepatic low-density lipoprotein receptor levels. Histopathological analysis of the liver showed decreased inflammation and vacuolization, and reduced adipocyte cell size. Immunohistochemical analysis showed suppression of NLRP۳ in epididymal adipocytes and NF- κB expression in the liver. Conclusion: Saroglitazar ameliorated obesity and associated inflammation via modulation of NLRP۳ inflammasome and NF- κB in MSG obese Wistar rats.

کلمات کلیدی:

Inflammation, Low-density lipoprotein - receptors, Monosodium glutamate, NLRP۳ inflammasome Nuclear factor - kappa B, Obesity, Saroglitazar