Ameliorative effects of telmisartan in diabetic rats with indomethacin-induced gastric ulceration

The protective effects of telmisartan, the angiotensin II-receptor antagonist, were investigated in rats with type 2 diabetes mellitus exposed to acute gastric ulceration. Following successful induction of diabetes, telmisartan treatment (1 mg/kg/day, orally) was started and continued for 8 weeks, after which acute gastric ulceration was induced by indomethacin. Telmisartan significantly attenuated the hyperglycemia and hypoinsulinemia in diabetic rats. Also, telmisartan significantly reduced the elevations of total gastric acid output, pepsin activity, gastric ulcer index and gastric mucosal tumor necrosis factor-alpha, nitric oxide, malondialdehyde and caspase-3 activity, and restored the depleted antioxidant defenses (reduced glutathione level, and superoxide dismutase and catalase activities) caused by indomethacin administration in diabetic rats. Histopathological gastric tissue damage induced by indomethacin in diabetic rats was ameliorated by telmisartan treatment. Immunohistochemical analysis revealed that telmisartan markedly attenuated the reduction in insulin content of pancreatic islet beta-cells, and prevented the indomethacin-induced overexpression of inducible nitric oxide synthase and nuclear factor-kappa B in gastric mucosa of diabetic rats. It was concluded that telmisartan represents a potential therapeutic option to reduce the risk of gastric ulceration induced by nonsteroidal anti-inflammatory drugs in type 2 diabetic patients. (C) 2010 Elsevier B.V. All rights reserved.