

Abstract:

Curcumin, the active principle present in the yellow spice turmeric, has been shown to exhibit various pharmacological actions such as antioxidant, anti-inflammatory, antimicrobial, and anti-carcinogenic activities. Previously we have reported that dietary curcumin delays diabetes-induced cataract in rats. However, low peroral bioavailability is a major limiting factor for the success of clinical utilization of curcumin. In this study, we have administered curcumin encapsulated nanoparticles in streptozotocin (STZ) induced diabetic cataract model. Oral administration of 2 mg/day nanocurcumin was significantly more effective than curcumin in delaying diabetic cataracts in rats. The significant delay in progression of diabetic cataract by nanocurcumin is attributed to its ability to intervene the biochemical pathways of disease progression such as protein insolubilization, polyol pathway, protein glycation, crystallin distribution and oxidative stress. The enhanced performance of nanocurcumin can be attributed probably to its improved oral bioavailability. Together, the results of the present study demonstrate the potential of nanocurcumin in managing diabetic cataract.