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Ganoderic acid ameliorates ferric nitrilotriacetate induced renal cancer via suppression of of PGE2 and COX-2 Level via nuclear factor-κB

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Objectives: Renal cell carcinoma (RCC) is the most common tumor in adult kidneys. yet it is poorly understood. RCC accounts for 3% of all adult malignancies and 90% of kidney neoplasms. Ganoderic acid (triterpenoids) already proofed their anti-inflammatory effect against various animal models. In this study, we investigate the renal protective effect against Fe-NTA induced renal cancer.

Methods: For the induction of renal cancer, intraperitoneal injection of DEN (200 mg/kg) and FE-NTA (9 mg/kg) was used. The rats were divided into groups and received the oral administration of ganoderic acid. Macroscopically, renal tumor was observed. Renal cancer markers such as [3H] thymidine incorporation and ornidine decarboxylase (ODC) activity. Biochemical parameters also estimated at end of the study. Renal tissue histopathology study was performed.

Results: GA exhibited the 90% and 96.5% free radical scavenging activity against 2,2-diphenyl-1-picrylhydrazyl (DPPH) and 2,2'-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) model. GA significantly reduced the level of ODC and [3H] thymidine incorporation along with reduction of level of creatine, blood urea nitrogen (BUN), lactate dehydrogenase (LDH) at dose dependent manner. GA significantly ($P<0.001$) reduced the level of MDA and increased the level of SOD, GPx, GSH, CAT, respectively. GA significantly down-regulated the level of cytokines TNF-α, IL-6, IL-1β and inflammatory parameters includes COX-2, PGE2, NF-κB, respectively. GA alter the histopathological changes.

Conclusions: GA showed the renal protective effect against the DEN+Fe-NTA induced renal cancer via suppression of NF-κB.