

NephroEaze

1.	Provides relief from acute or chronic
2.	kidney insufficiency.
3.	Promotes restoration of nephron function.
4.	Helpful in metabolic disorders.
5.	Restores kidney functions.



LATTICE C

SCIENTIFIC STUDIES OF THE INGREDIENTS OF NEPHROEAZE

Kharbuza (Cucumis melo)

Bushra Suhail, *et al.* (2018) evaluated the nephroprotective effect of ethanolic extract (400 mg/dl) of *Cucumis melo* seeds and its comparison with allopurinol (50 mg/dl) against the renal damage induced by 0.75% ethylene glycol in rats. Results showed decreased levels of the blood urea nitrogen, creatinine and uric acid (<u>https://proceedings-szmc.org.pk</u>).

Ajwain (Trachyspermum ammi)

Bushra Ishaq, *et al.* (2015) evaluated the protective activity of *T. ammi* seeds aqueous extract against gentamicin-induced nephrotoxicity in albino rabbits. *T. ammi* extract reversed the severity of gentamicin-induced nephrotoxicity by normalizing the indicators of kidney function e.g. serum urea, creatinine, blood urea nitrogen, albumin and serum electrolyte parameters indicating the nephroprotective potential of *T. ammi*. Nephroprotective potential was further confirmed by the histopathological examination. (Boletín Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas 2015; 14(4): 280-286.)

Kheera (Cucumis sativus)

Naaz Fatima, *et al.* (2018) demonstrated the ameliorative effect of seed of *Cucumis sativus* against arsenic induced toxicity in mice. Sodium arsenite at the dose of 3 mg/kg body weight was administered in mice for 4 weeks followed by the administration of *Cucumis sativus* for 6 weeks at dose of 500 mg/kg body weight. Their biochemical levels like liver and kidney function tests were assayed and were found with elevated levels. But, after administration of aqueous extract of *Cucumis sativus*, there was significant amelioration in the biochemical levels, viz SGOT, SGPT, ALP, bilirubin, urea, uric acid, and creatinine. (Open Journal of Pathology.2018;8(3) doi: 10.4236/ojpathology.2018.83009)

Mulethi (Glycyrrhiza glabra)

Parakh Basist, *et al.* (2022) evaluated the metabolite profiling and nephroprotective potential of *Glycyrrhiza glabra* L. roots against cisplatin (CP)-induced nephrotoxicity *in vitro* and *in vivo*. The *in vitro* assay of methanolic extract of *Glycyrrhiza glabra* (GGE) showed significant (P<0.001 nephroprotective, cellular antioxidant potential and improvement in morphological changes induced by CP. Further, administration of CP caused significant (P<0.001) elevation in biochemical, inflammatory, oxidative stress, caspase-3, as well as histopathological changes in kidney tissue. Pre-treatment with GGE attenuated the elevated biochemical markers significantly, improved histopathological damage, and showed a comparable result to ascorbic acid and -ketoanalogue. (Iran J Basic Med Sci 2022; 25(11):1286-1298 doi: 10.22038/IJBMS.2022.65478.14404)

Sehjana (Moringa oleifera)

Akinleye Stephen Akinrinde, et al. (2020) evaluated the nephroprotective effect of methanol extract of *Moringa oleifera* (MO) leaves on acute kidney injury induced by ischemia-reperfusion in rats. MO significantly (p<0.05) ameliorated IR-induced increases in malondialdehyde (MDA), protein carbonyls (PC) and advanced oxidation protein products (AOPP), while also decreasing serum BUN and creatinine levels. Histopathology revealed marked improvement of tissue alterations induced by IR with both doses (200 mg/kg and 400 mg/kg) of MO. (Afr Health Sci. 2020; 20(3):1382–1396 doi: <u>10.4314/ahs.v20i3.44</u>)

Resha-e-Makka (Zea mays)

Parakh Basist, et al. evaluated the metabolite profiling and nephroprotective potential of the Zea mays L. silk extract against diclofenac-induced nephrotoxicity in Wistar rats. Also, nephrotoxicity was induced in

Wistar rats by injecting diclofenac (DC) (50 mg/kg, bw, i.p.) at a single dose. The efficacy of the methanolic silk extract of *Zea mays* (ZME) as a nephroprotective agent was then evaluated at doses of 100, 200, and 400 mg/kg/day, bw, p.o. Pre-treatment with the ZME attenuated the elevated biochemical markers significantly at medium and high doses along with improvement in histopathological and immunohistochemical damages and showing comparable results to those of -ketoanalogue. (ACS Omega. 2022; 7(41): 36519-36534 doi: https://doi.org/10.1021/acsomega.2c04396)

Kabab Chini (Piper cubeba)

Qazi Zaid Ahmad, *et al.* (2012) evaluated the nephroprotective effect of Kabab Chini (KC) against gentamycin-induced nephrotoxicity in Wistar rats. The nephroprotective effect was assessed on the basis of biochemical estimation of serum urea and creatinine levels and histopathological examination of the treated kidney. The findings demonstrated that KC produced a significant nephroprotective effect in both pre-treated and post-treated groups. The results of our study indicate that KC possesses significant benefit against gentamycin-induced nephrotoxicity. (Saudi J Kidney Dis Transpl 2012; 23(4):773-781)

Badiyan (Foeniculum vulgare)

Hassan Barakat, et al. (2023) assessed the nephroprotective effect of fennel (*Foeniculum vulgare*) seeds and their sprouts on CCl_4 -induced nephrotoxicity and oxidative stress in rats. fennel seeds (FS) and fennel seed sprouts (FSS) improved kidney function, reduced malondialdehyde (MDA), and restored the activity of reduced glutathione (GSH), superoxide dismutase (SOD), and catalase (CAT). Both FS and FSS extracts attenuated the histopathological alteration in CCl_4 -treated rats. (Antioxidants 2023, 12(2), 325; <u>https://doi.org/10.3390/antiox12020325</u>)

Tukhm-i-Karafs (Apium graveolens)

Mohd Naushad, *et al.* (2021) assessed the nephroprotective effect of *Apium graveolens* L. against cisplatininduced nephrotoxicity. In curative protocol, cisplatin (5 mg/kg body weight i.p) was administered on day one and powder of Tukhm-i-Karafs (TK) (500 and 1000 mg/kg p.o.) from the sixth day onwards for ten days. TK (500 and 1000 mg/kg p.o.) was given for ten days and Cisplatin (5 mg/kg body weight i.p) on day 11 in the protective model. At the end of the study, all the animals were sacrificed, and renal biochemical parameters were determined. The result advocated that TK prevented renal injury and maintained normal renal function in both models. (J Ayurveda Integr Med. 2021; 12(4): 607–615 doi: <u>10.1016/j.jaim.2021.06.005</u>)

Belgiri (Aegle marmelos)

Deepak Garg and Pragi Arora (2024) evaluated the hepatoprotective and nephroprotective properties of Bael fruit extract against carbon tetrachloride-induced toxicity in rats. Bael was more successful in lowering high levels of urea, creatinine, ALT, AST, and ALP at a 200 mg/kg/day methanol extract. This provides scientific proof that medicinal herbs like Bael can be used to treat renal and liver diseases. (Journal of Applied Pharmaceutical Research. 2024;12(3):11-20 doi: 10.69857/joapr.v12i3.524)

Papita Desi (Carica papaya leaves)

Yuvaraj Maria Francis, *et al.* (2023) analysed the efficacy of the ethanolic extract of *C. papaya* leaves (ECP) against HgCl₂-induced nephrotoxicity. ECP (600 and 300 mg/kg) reduced renal damage and expression of Neutrophil gelatinase-associated lipocalin (NGAL) in immunohistochemistry and urinary kidney injury molecule-1 (KIM-1) and NGAL gene in real-time PCR. This study attests to the nephroprotective effect of ECP against HgCl2-induced toxicity. (ACS Omega. 2023 Jun 20; 8(24): 21696–21708 doi: 10.1021/acsomega.3c01045)

Punarnava (Boerhaavia diffusa)

Indhumathi T, Shilpa K, Mohandas S (2015) evaluated the nephroprotective role of *Boerhavia diffusa* leaves against mercuric chloride induced toxicity in experimental rats. The group of rats which were treated with mercuric chloride followed by leaves extract of *Boerhavia diffusa* (200) μ /kg/day) for 10 days orally. There was reduction in serum alkaline phosphatase (ALP), acid phosphatase, aspartate transaminase, alanine transaminase (ALT), LDH, lipid peroxidation (LPO), urea and creatinine and increased levels of glutathione peroxidase (GPx), increase in reduced glutathione (GSH), Vit-C and catalase. (J Pharm Res. 2015; 2011(6): 1848–50.)

Bikh-i-Kasni (Cichorium intybus)

Wasim Ahmad, Ghufran Ahmad, NA Khan and Shamshad Ahmad (2013) investigated the protective, curative and diuretic effects of seed of *Cichorium intybus* against gentamicin (40/ mg/kg) induced acute renal injury and also for the diuretic effect in albino rats. In the preventive regimen, the extract showed significant reduction in the elevated blood urea and serum creatinine and normalized the structural disintegration of kidney tissue. Both biochemical markers of kidney function decreased significantly and definite sign of regenerative process were observed in the curative group. The test drug increased the total volume of urine and concentration of sodium and potassium in it and exhibited significant diuretic effect. The finding suggested that the ethanol extract of seed of *Cichorium intybus* possessed marked nephroprotective and diuretic activity, and could offer a promising role in the treatment of acute renal injury caused by nephrotoxins like gentamicin. (Unani Medicus. 2013; 2(1): 40-48.)

Gilo (Tinospora cordifolia)

Ragavee Ambalavanan, Arul Daniel John and Asha Devi Selvara (2021) investigated the nephroprotective role of nanoencapsulated *Tinospora cordifolia* using polylactic acid nanoparticles (TC-PLA NP) in streptozotocin-induced diabetic nephropathy rats. The results showed that the nephroprotective effect of TC-PLA NPs reduces the blood glucose level, regulates the renal parameters, decreases the cytokine levels and reduces the mRNA expressions level of different genes related to diabetic nephropathy.(IET Nanabiotechnol. 2021; 15(4): 411–417 doi:10.1049/nbt2.12030)

Mako (Solanum nigrum)

Mohd Aslam, Mohamed Shiffa and Nazeem Fahamiya (2022) conducted a study to evaluate the nephroprotective activity of the berries of Mako on gentamicin-induced nephrotoxicity in rats. It was revealed that the methanolic extract (ME) of *S. nigrum* and its fractions significantly reduced the rise of blood urea nitrogen (BUN), and Sr. Cr. creatinine levels induced by gentamicin. The histopathological analysis also showed the protective nature of *S. nigrum* in this study. Biochemical parameters and histopathological results of this study confirmed that the berries have nephroprotective activity against gentamicin-induced renal damage which justifies the traditional claims. (JJPSR, 2022; Vol. 13(1): 403-408. doi:10.13040/JJPSR.0975-8232.13(1).403-08)

Ghokru (Tribulus terrestris)

F Akhtar, M Azhar, M Aslam, K Javed (2020) evaluated the nephroprotective effect of Khar-e-Khasak Khurd (KKK) powder (*Tribulus terristris*) on gentamicin-induced experimental nephrotoxicity in rats. The oral administration of KKK (840 mg/kg) inhibited the rise in blood urea (47.09%), serum creatinine (95.93%) and uric acid (51.41%). There were 70.79% inhibition in the rise of BUN, 72.35% inhibition in the rise of serum creatinine and 79.35% inhibition in the rise of uric acid with 1680 mg (KKK). (Asian Journal of Research in Nephrology. 2020; 3(3): 6-13.)

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