

Antioxidant, Immunomodulating & Anti-inflammatory Actions of [Erva Tostão](#) (*Boerhavia diffusa*)

- Bhardwaj, V., et al. "Unlocking antioxidant-anticancer synergy: an exploration of therapeutic bioactives from methanolic extracts of *Rubus ellipticus* and *Boerhavia diffusa* Using HeLa cell line." *Assay Drug Dev. Technol.* 2024 Oct; 22(7): 361-372.
- Lee, O., et al. "Potentials of natural antioxidants in reducing inflammation and oxidative stress in chronic kidney disease." *Antioxidants* (Basel). 2024 Jun; 13(6): 751.
- Kaviya, M., et al. "Evaluation of nutritional substances and investigation of antioxidant and antimicrobial potentials of *Boerhavia diffusa* with in silico molecular docking." *Molecules*. 2022 Feb; 27(4): 1280.
- Sinan, K., et al. "LC-MS/HRMS analysis, anti-cancer, anti-enzymatic and anti-oxidant effects of *Boerhavia diffusa* extracts: a potential raw material for functional applications." *Antioxidants* (Basel). 2021 Dec; 10(12): 2003.
- Kalaivani M., et al. "Attenuation of tacrolimus induced oxidative stress, mitochondrial damage, and cell cycle arrest by *Boerhavia diffusa* root fraction in MDCK cell lines." *Iran J. Basic Med. Sci.* 2021 Aug; 24(8): 1087-1097.
- Pb, B., et al. "Prophylactic efficacy of *Boerhavia diffusa* L. aqueous extract in toluene induced reproductive and developmental toxicity in *Drosophila melanogaster*." *J. Infect. Public Health.* 2020 Feb; 13(2): 177-185.
- Yahaya, E., et al. "Attenuation of oxidative stress and artificial wound closure in C2C12 myoblasts induced by sequential extracts of *Boerhavia diffusa*." *J. Pharm. Pharmacol.* 2018 Jan; 70(1): 111-123.
- Bajpai, V., et al. "Attenuation of inflammatory responses by (+)-syringaresinol via MAP-Kinase-mediated suppression of NF- κ B signaling *in vitro* and *in vivo*." *Sci Rep.* 2018 Jun; 8(1): 9216.
- Hara, K., et al. "Antioxidant activities of traditional plants in Sri Lanka by DPPH free radical-scavenging assay." *Data Brief.* 2018 Feb; 17: 870-875.
- Kaushik, A., et al. "Antioxidant and hepatoprotective potential of swaras and hima extracts of *Tinospora cordifolia* and *Boerhavia diffusa* in Swiss albino mice." *Pharmacogn. Mag.* 2017 Oct; (Suppl 3): S658-S662.
- Giresha, A., et al. "Neutralization of inflammation by inhibiting *in vitro* and *in vivo* secretory phospholipase A(2) by ethanol extract of *Boerhaavia diffusa* L." *Pharmacognosy Res.* 2017 Apr-Jun; 9(2): 174-181.
- Karwasra, R., et al. "Safety assessment and attenuation of cisplatin induced nephrotoxicity by tuberous roots of *Boerhaavia diffusa*." *Regul. Toxicol. Pharmacol.* 2016 Nov; 81: 341-352.
- Ayyappan, P., et al. "Attenuation of oxidative damage by *Boerhaavia diffusa* L. against different

neurotoxic agents in rat brain homogenate." *J. Diet. Suppl.* 2016; 13(3): 300-12.

Yang, L., et al. "Protective role of liriiodendrin in sepsis-induced acute lung injury." *Inflammation*. 2016 Oct; 39(5): 1805-13.

Sawardekar, S., et al. "Evaluation of the effect of *Boerhavia diffusa* on gentamicin-induced nephrotoxicity in rats." *J. Ayurveda Integr. Med.* 2015 Apr-Jun; 6(2): 95-103.

Bairwa, K., et al. "Anti-inflammatory potential of a lipid-based formulation of a rotenoid-rich fraction prepared from *Boerhavia diffusa*." *Pharm. Biol.* 2015 Aug; 53(8): 1231-8.

Tacchini, M., et al. "Phytochemical profile and bioactivity of traditional ayurvedic decoctions and hydro-alcoholic macerations of *Boerhaavia diffusa* L. and *Curculigo orchioides* Gaertn." *Nat. Prod. Res.* 2015; 29(22): 2071-9.

Nagarani, G., et al. "Effect of hydrothermal processing on total polyphenolics and antioxidant potential of underutilized leafy vegetables, *Boerhaavia diffusa* and *Portulaca oleracea*." *Asian Pac. J. Trop. Biomed.* 2014 May; 4(Suppl 1): S468-77.

Prathapan, A., et al. "Protective effect of *Boerhaavia diffusa* L. against mitochondrial dysfunction in angiotensin II induced hypertrophy in H9c2 cardiomyoblast cells." *PLoS One*. 2014 Apr; 9(4): e96220.

Mukherjee, P., et al. "Immunomodulatory leads from medicinal plants." *Ind. J. Trad. Knowl.* 2014; 13(2): 235-256.

Bairwa, K., et al. "Rotenoids from *Boerhaavia diffusa* as potential anti-inflammatory agents." *J. Nat. Prod.* 2013 Aug; 76(8): 1393-8.

Aher, V., et al. "Evaluation of the genotoxic and antigenotoxic potential of the alkaloid punarnavine from *Boerhaavia diffusa*." *Planta Med.* 2013 Jul; 79(11): 939-45.

Prathapan, A., et al. "*Boerhaavia diffusa* L. attenuates angiotensin II-induced hypertrophy in H9c2 cardiac myoblast cells via modulating oxidative stress and down-regulating NF- κ B and transforming growth factor β 1." *Br. J. Nutr.* 2013 Oct; 110(7): 1201-10.

Vineetha, V., et al. "Arsenic trioxide toxicity in H9c2 myoblasts-damage to cell organelles and possible amelioration with *Boerhavia diffusa*." *Cardiovasc. Toxicol.* 2013 Jun; 13(2): 123-37.

Apu, A., et al. "Phytochemical screening and *in vitro* bioactivities of the extracts of aerial part of *Boerhavia diffusa* Linn." *Asian Pac. J. Trop. Biomed.* 2012 Sep; 2(9): 673-8.

Gulati, V., et al. "Enzyme inhibitory and antioxidant activities of traditional medicinal plants: Potential application in the management of hyperglycemia." *BMC Complement. Altern. Med.* 2012 Jun; 12:77.

Pareta, S., et al. "Aqueous extract of *Boerhaavia diffusa* root ameliorates ethylene glycol-induced hyperoxaluric oxidative stress and renal injury in rat kidney." *Pharm. Biol.* 2011 Dec; 49(12): 1224-33.

Aviello, G., et al. "Potent antioxidant and genoprotective effects of boeravinone G, a rotenoid isolated from *Boerhaavia diffusa*." *PLoS One*. 2011; 6(5): e19628.

Olaleye, M., et al. "Antioxidant activity and hepatoprotective property of leaf extracts of

Boerhaavia diffusa Linn against acetaminophen-induced liver damage in rats." *Food Chem. Toxicol.* 2010 Aug-Sep; 48(8-9): 2200-5.

Asadulla, S. "Anti-inflammatory activities of *Boerhaavia diffusa* roots in Albino rats." *Arch. Pharma. Sci. Res.* 2010; 2: 267–270.

Rachh, P., et al. "In-vitro evaluation of antioxidant activity of punarnava (*Boerhaavia diffusa* L.)" *Int. J. Pharm. Res.* 2009;1:36–40.

Sathyapriya, K., et al. "Antioxidant status in polycystic end-staged renal diseased patients and antihemolytic effect of *Boerhaavia diffusa*." *Ind. J. Biochem. Biophys.* 2009; 46(3): 269–272.

Manu, K., et al. "Immunomodulatory activities of Punarnavine, an alkaloid from *Boerhaavia diffusa*." *Immunopharmacol. Immunotoxicol.* 2009; 31(3): 377-87.

Priyadarsini, T., et al. "In vitro antioxidant and cytotoxic analysis of *Boerhaavia diffusa* L." *Ethnobotanical Leaflets.* 2009; 13: 263–268.

Manu, K., et al. "*Boerhaavia diffusa* stimulates cell-mediated immune response by upregulating IL-2 and downregulating the pro-inflammatory cytokines and GM-CSF in B16F-10 metastatic melanoma bearing mice." *J. Exp. Ther. Oncol.* 2008; 7(1): 17-29.

Sangameswaran, B., et al. "Anti-inflammatory and anti-bacterial activity of leaves of *Boerhaavia diffusa* L." *Pharmacog. Mag.* 2008: S65.

Manu, K., et al. "Effect of Punarnavine, an alkaloid from *Boerhaavia diffusa*, on cell-mediated immune responses and TIMP-1 in B16F-10 metastatic melanoma-bearing mice." *Immunopharmacol. Immunotoxicol.* 2007; 29(3-4): 569-86.

Sumanth, M., et al. "Antistress, adoptogenic and immunopotentiating activity roots of *Boerhaavia diffusa* in mice." *Int. J. Pharmacol.* 2007; 3(5): 416–420.

Manu, K., et al. "Studies on the protective effects of *Boerhaavia diffusa* L. against gamma radiation induced damage in mice." *Integr. Cancer Ther.* 2007 Dec; 6(4): 381-8.

Ahmed-Belkacem, A., et al. "Nonprenylated rotenoids, a new class of potent breast cancer resistance protein inhibitors." *J. Med. Chem.* 2007 Apr; 50(8): 1933-8.

Gacche, R., et al. "Antioxidant and possible anti-inflammatory potential of selected medicinal plants prescribed in the Indian traditional system of medicine." *Pharm. Bio.* 2006; 44(5): 389–395.

Aladesanmi, A., "Antimicrobial and antioxidant activities of some Nigerian medicinal plants." *Afr. J. Tradit. Complement. Altern. Med.* 2006 Nov; 4(2): 173-84.

Pandey, R., et al. "Immunosuppressive properties of flavonoids isolated from *Boerhaavia diffusa* Linn." *Int. Immunopharmacol.* 2005; 5(3): 541-53.

Devaki, T., et al. "*Boerhaavia diffusa* on tissue anti-oxidant defense system during ethanol-induced hepatotoxicity in rats." *J. Nat. Rem.* 2005; 5(2): 102–107.

Jagetia, G., et al. "The evaluation of nitric oxide scavenging activity of certain Indian medicinal plants *in vitro*: A preliminary study." *J. Med. Food.* 2004 Fall; 7(3): 343-8.

Satheesh, M., et al. "Antioxidant effect of *Boerhaavia diffusa* L. in tissues of alloxan induced

diabetic rats." *Indian J. Exp. Biol.* 2004; 42(10): 989-92.

Jung, H., et al, "In vivo anti-inflammatory and antinociceptive effects of liriodendrin isolated from the stem bark of *Acanthopanax senticosus*." *Planta Med.* 2003 Jul; 69(7): 610-6.

Mehrotra, S., et al. "Immunomodulation by ethanolic extract of *Boerhaavia diffusa* roots." *Int. Immunopharmacol.* 2002; 7: 987-96.

Mehrotra, S., et al. "Antilymphoproliferative activity of ethanolic extract of *Boerhaavia diffusa* roots." *Exp. Mol. Pathol.* 2002 Jun; 72(3): 236-42.

Mungantiwarn, A., et al. "Studies on the immunomodulatory effects of *Boerhaavia diffusa* alkaloidal fraction." *J. Ethnopharmacol.* 1999 May; 65(2): 125-31.

Muntgantiwar, A., et al. "Effect of stress on plasma and adrenal cortisol levels and immune responsiveness in rats: modulation by alkaloidal fraction of *Boerhaavia diffusa*." *Fitoterapia.* 1997; 68(6): 498–500.

Mungantiwar, A., et al. "Adaptogenic activity of aqueous extract of the roots of *Boerhaavia diffusa* Linn." *Indian Drugs.* 1997; 34(4): 184–189.

Suri, O., et al. "*Boerhaavia diffusa*, a new source of phytoecdysones." *Planta Medica.* 1982; 44(3): 180–181.

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