Anti-Inflammatory and Anti-Arthritic Actions of

Sarsaparilla (*Smilax*)

Wang, F., et al. “Sarsasapogenin stimulates angiogenesis and osteogenesis coupling to treat estrogen deficiency-induced osteoporosis by activating the GPX4/SLIT3/ROBO1 axis.” *Phytomedicine*. 2025 Jan; 136: 156297.

Hong, J., et al. “Exploring the potential mechanism of *Smilax glabra* Roxb in periodontitis through network pharmacology and molecular docking.” *Curr. Pharm. Des.* 2025 Aug. Epub ahead of print. PMID: 40798949.

Li, J., et al. “Engeletin targets mitochondrial dysfunction to attenuate oxidative stress and experimental colitis in intestinal epithelial cells through AMPK/SIRT1/PGC-1α signaling.” *Antioxidants* (Basel). 2025 Apr; 14(5): 524.

Feng, H., et al. “Astilbin from *Smilax china* L. remarkably inhibits LPS-induced endometritis in rats via blocking positive feedback between TLR4 and IL-6R signalling pathways in a PPAR-γ-dependent manner.” *J. Ethnopharmacol.* 2025 May; 348: 119861.

Yu, L., et al. “*Smilax china* L. polyphenols inhibit LPS-induced macrophage M1 polarization to alleviate inflammation through NF-κB signaling pathway *in vitro* and *in vivo*.” *J. Ethnopharmacol.* 2025 Feb; 342: 119355.

Kim, Y., et al. “Anti-inflammatory response of new postbiotics in TNF-α/IFN-γ-induced atopic dermatitis-like HaCaT keratinocytes.” *Curr. Issues Mol. Biol.* 2024 Jun; 46(6): 6100-6111.

Ilyas, S., et al. “Mechanistic exploration of *Smilax glabra* Roxb. in osteoarthritis: insights from network pharmacology, molecular docking, and *in vitro* validation.” *Pharmaceuticals* (Basel). 2024 Sep; 17(10): 1285.

Liang, Y., et al. “Chongrenside D from *Smilax china* L protects against inflammation-induced joint destruction via inhibiting osteoclastogenesis.” *Heliyon*. 2024 Oct; 10(19): e38818.

Li, C., et al. “Astilbin inhibited neutrophil extracellular traps in gouty arthritis through suppression of purinergic P2Y6 receptor.” *Phytomedicine*. 2024 Jul; 130: 155754.

Chen, R., et al. “Sarsasapogenin inhibits YAP1-dependent chondrocyte ferroptosis to alleviate osteoarthritis.” *Biomed. Pharmacother.* 2023 Dec; 168: 115772.

Marahatha, R., et al. “Pharmacologic activities of phytosteroids in inflammatory diseases: Mechanism of action and therapeutic potentials.” *Phytother. Res.* 2021 Sep; 35(9): 5103-5124.

Xu, Y., “Engeletin alleviates cerebral ischemia reperfusion-induced neuroinflammation via the HMGB1/TLR4/NF-κB network.” *J. Cell. Mol. Med.* 2023 Jun; 27(12): 1653-1663.

Dai, Y., et al. “Sarsasapogenin, a principal active component absorbed into blood of total saponins of Anemarrhena, attenuates proliferation and invasion in rheumatoid arthritis

fibroblast-like synoviocytes through downregulating PKM2 inhibited pathological glycolysis." *Phytother. Res*. 2023 May; 37(5): 1951-1967.
Wu, Y., et al. "Influence of heat processing on the anti-inflammatory activity of fresh *Smilax glabra* based on PDE4 inhibition." *Food Chem. X*. 2022 Aug; 15: 100425.
Xu, W., et al. "The protective effects of neoastilbin on monosodium urate stimulated THP-1-derived macrophages and gouty arthritis in mice through NF-κB and NLRP3 inflammasome pathways." *Molecules*. 2022 May; 27(11): 3477.
Xu, M., et al. "Regulating the imbalance of gut microbiota by *Smilax china* L. polyphenols to alleviate dextran sulfate sodium-induced inflammatory bowel diseases." *Am. J. Chin. Med.* 2022; 50(2): 553-568.
Pan, X., et al. "Pectic polysaccharide from *Smilax china* L. ameliorated ulcerative colitis by inhibiting the galectin-3/NLRP3 inflammasome pathway." *Carbohydr. Polym*. 2022 Feb; 277: 118864.
Peng, J., et al. "Sarsasapogenin suppresses RANKL-induced osteoclastogenesis *in vitro* and prevents lipopolysaccharide-induced bone loss *in vivo*." *Drug Des. Devel. Ther.* 2020 Aug; 14: 3435-3447.
Feng, H., et al. "The flavonoid-enriched extract from the root of *Smilax china* L. inhibits inflammatory responses via the TLR-4-mediated signaling pathway." *J. Ethnopharmacol.* 2020 Jun; 256: 112785.
Dong, L., et al. "Astilbin from *Smilax glabra* Roxb. attenuates inflammatory responses in complete Freund's adjuvant-induced arthritis rats." *Evid. Based Complement. Alternat. Med*. 2018 Dec; 2018: 6279328.
Tettey, C., et al. "*Smilax china* leaf extracts suppress pro-inflammatory adhesion response in human umbilical vein endothelial cells and proliferation of HeLa cells." *Arch. Physiol. Biochem.* 2018 Oct:1-5.
Xie, Y., et al. "Anti-inflammatory furostanol saponins from the rhizomes of *Smilax china* L." *Steroids*. 2018 Dec; 140: 70-76.
Bao, Y., et al. "Therapeutic effects of *Smilax glabra* and *Bolbostemma paniculatum* on rheumatoid arthritis using a rat paw edema model." *Biomed. Pharmacother.* 2018 Dec; 108: 309-315.
Shu, J., et al. "Three new flavonoid glycosides from *Smilax glabra* and their anti-inflammatory activity." *Nat. Prod. Res.* 2018 Aug; 32(15): 1760-1768.
Dong, L., et al. "Astilbin from *Smilax glabra* Roxb. attenuates inflammatory responses in complete freund's adjuvant-induced arthritis rats." *Evid. Based Complement. Alternat. Med.* 2017; 2017: 8246420.
Tian, L., et al. "Steroidal Saponins from the genus *Smilax* and their biological activities." *Nat. Prod. Bioprospect.* 2017 Aug; 7(4): 283-298.
Zhong, C., et al. "Phenolic compounds from the rhizomes of *Smilax china* L. and their anti-

inflammatory activity." *Molecules*. 2017 Apr; 22(4).
Lu, C., et al. "Polysaccharides from *Smilax glabra* inhibit the pro-inflammatory mediators via ERK1/2 and JNK pathways in LPS-induced RAW264.7 cells." *Carbohydr. Polym.* 2015 May; 122: 428-36.
Lu, C., et al. "Optimization of astilbin extraction from the rhizome of Smilax glabra, and evaluation of its anti-inflammatory effect and probable underlying mechanism in lipopolysaccharide-induced RAW264.7 macrophages." *Molecules*. 2015 Jan; 20(1): 625-44.
Lu, C., et al. "Antioxidant and anti-inflammatory activities of phenolic-enriched extracts of *Smilax glabra*." *Evid. Based Complement. Alternat. Med.* 2014; 2014: 910438.
Luo, Y., et al. "[Effect of *Smilax* china bioactive fraction on tumor necrosis factor-α and interleukin-4 contents in uterine tissue of rats with chronic pelvic inflammatory disease]." *Nan. Fang Yi Ke Da Xue Xue Bao.* 2014 Feb; 34(2): 236-40.
Ma, Y., et al. "[Pharmaceutical screening of the effective fraction from *Smilax* for treatment of chronic pelvic inflammatory disease]." *Nan Fang Yi Ke Da Xue Xue Bao.* 2013 Jan; 33(1): 145-9.
He, X., et al. "[Comparison of anti-inflammatory effect and analysis of astilbin red and white transverse section *Smilax glabra* in 28 collection sites]." *Zhongguo Zhong Yao Za Zhi.* 2012 Dec; 37(23): 3595-8.
Liagre, B., et al. "Inhibition of human rheumatoid arthritis synovial cell survival by hecogenin and tigogenin is associated with increased apoptosis, p38 mitogen-activated protein kinase activity and upregulation of cyclooxygenase-2." *Int. J. Mol. Med.* 2007 Oct; 20(4): 451-60.
Shao, B., et al. "Steroidal saponins from *Smilax china* and their anti-inflammatory activities." *Phytochemistry.* 2007 Mar; 68(5): 623-30.
Shu, X., et al. "The anti-inflammation effects of *Smilax china* ethylacetate extract in rats and mice." *Zhongguo. Zhong. Yao. Za. Zhi.* 2006 Feb; 31(3): 239-43.
Shu, X., et al. "Anti-inflammatory and anti-nociceptive activities of *Smilax china* L. aqueous extract." *J. Ethnopharmacol.* 2006 Feb; 103(3): 327-32.
Ji, W., et al. "Effects of Rebixiao granules on blood uric acid in patients with repeatedly attacking acute gouty arthritis." *Chin. J. Integr. Med.* 2005 Mar; 11(1): 15-21.
Jiang, J., et al. "Immunomodulatory activity of the aqueous extract from rhizome of *Smilax glabra* in the later phase of adjuvant-induced arthritis in rats." *J. Ethnopharmacol.* 2003; 85(1): 53-9.
Ageel, A., et al. "Experimental studies on antirheumatic crude drugs used in Saudi traditional medicine." *Drugs Exp. Clin. Res.* 1989; 15(8): 369-72.

Return to the Rain-Tree Tropical Plant Database File for Sarsaparilla