Anti-Diabetic, Cholesterol Lowering & Anti-Obesity Actions

of Mullaca (Physalis angulata)

Quite a few studies report that mullaca has anti-diabetic actions and underlying those actions are mullaca's antioxidant and anti-inflammatory actions. Many different cells in the body which have oxidative stress, become insulin resistant, or lose the ability to process, absorb and utilize glucose from the bloodstream properly. When arteries and veins have oxidative stress, it can increase blood pressure, narrow arteries, and cause chronic heart diseases and high cholesterol levels which are side effects of diabetes. When oxidative stress affects nerves, it can cause diabetic neuropathy. When it affects the eyes and kidneys, it can cause diabetic retinopathy, and nephropathy (diabetic kidney disease). It is for this reason that recent animal studies report that giving mullaca to diabetic animals either prevented or treated many of these diabetic complications and side effects and improved their overall health. One study even reported that giving mullaca to animals prevented neuropathy in animals given a chemotherapy drug well known to cause peripheral neuropathy.

These studies also reported that mullaca reduced the blood glucose levels in the animals studied, mainly through an enzyme inhibition action. More than a dozen different chemicals in mullaca are known to block the actions of two digestive enzymes (α -amylase and α -glucosidase) which are responsible for breaking down and absorbing starches and sugars in the diet. This ability was also described as an anti-obesity action since it affects weight gain by affecting calorie intake.

Published Research:

Adha, S., et al. "Herbal medicines as complementary therapy for managing complications in COVID-19 patients with Diabetes mellitus." *Diabetes Metab. Syndr. Obes.* 2025 Jan; 18: 135-146. Muhdi, S., et al. "Effect of active fraction of *Physalis angulata* extract on p53, mRNA of CYP11A1, 17β-HSD3, FSHR, and MTA2 expressions on testes of streptozotocin-induced diabetic rats." *Trop. J. Nat. Prod. Res.* 2025 May; 9(5): 2149.

Fitrianingsih, S., et al. "Integrating network pharmacology, molecular docking, and molecular dynamics to explore the antidiabetic mechanism of *Physalis angulata* L." *Pharmacia* 2025; 72: 1-29. Papilaya, F., et al. "Active fraction of Ciplukan (*Physalis angulata* L.) increases phosphorylation on IRS-1 Tyr-612 and Akt Ser-473 in 24-hour incubation time." *J. Appl. Pharm. Sci.* 2025; 15(05): 121–128. Sulistyowati, Y., et al. "The effect of giving ciplukan herb (*Physalis angulata* L) to the number of diabetic nephropathy glomerulus of hyperglycemia rats." *E3S Web of Conferences.* 2022; 482: 01008. Febrina, M., et al. "[The effect of giving a infusion of the Ciplukan plant (*Physalis angulata* L.) on the blood sugar levels of male white mice (*Mus musculus* L.) induced by glucose.]" *Indones. J. Pharma. Res.* 2023 Dec; 12(2): 83-87.

Iwansyah, A., "Antidiabetic activity of *Physalis angulata* L. fruit juice on streptozotocin-induced diabetic rats." *So. Afri. J. Bot.* 2022 Mar; 145: 313-319.

Vo, T., et al. "The role of *Physalis angulata* as potential anti-type 2 diabetic agent." *Pharmacog. Res.* 2021; 13: 69-74.

Adewolu, A., et al. "Ameliorative effects of ethanolic leaf extract of *Physalis angulata* (Ewe Koropo) on diabetic-induced Wistar rats in South West Nigeria." *Med. Chem.* 2021; 11

Mafuyai, C., et al. "Antidiabetic activity of *Physalis angulata* in streptozotocin induced diabetic Wistar albino rats." 2020; 23(11): 33-43.

Nguyen, T., et al. "Investigation of the anti-diabetic and antioxidant activities of *Physalis angulata* extract." *Trop. J. Nat. Prod. Res.* 2020; 4(6): 243-248.

Afriyeni, H., et al. "[Antihypercholesterolemic effects of ethanol extracts from the stems and fruits of the ciplukan plant (*Physalis angulata* L.) on hypercholesterolemic white rats.]" *Higea Pharma. J.* 2019 Mar; 11(1): 49–61.

Maliangkay, H., et al. "[Phytochemical screening and antidiabetic potential of ethanol extract of ciplukan herb (*Physalis angulata* L.) in white rats (*Rattus novergicus*) induced by alloxan.]" *J-Edu. Bio.* 2019 Dec; 4(3): 98–107.

Adewoye, E., et al. "Anti-oxidative and reno-restorative effects of *Physalis angulata* (whole plant extract) in alloxan-induced diabetic male Wistar rats." *Afr. J. Med. Sci.* 2016 May; 45(1): 99-108.

Jang, Y., et al. "Screening of Korean natural products for anti-adipogenesis properties and isolation of kaempferol-3-o-rutinoside as a potent anti-adipogenetic compound from *Solidago virgaurea*." Molecules. 2016 Feb; 21(2): 226.

Raju, P., and Estari, M. "Anti-diabetic activity of compound isolated from *Physalis angulata* fruit extracts in alloxan-induced diabetic rats." *Am. J. Sci. Med. Res.* 2015; 1: 40–43.

Reddy, P., et al. "Anti-diabetic and hypolipidemic effect of aqueous and methanolic root extracts of *Physalis angulata* in streptozotocin (STZ) induced diabetic rats." *Int. J. Pharm. Res. Scholars*. 2014; 3: 402–409.

Choi, E., et al. "Effect of some medicinal plants on plasma antioxidant system and lipid levels in rats." *Phytother. Res.* 2005; 19(5): 382-6.

Return to the <u>Tropical Database file for Mullaca</u>
Copyrighted 2025 by Leslie Taylor. All rights reserved.