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Paw Paw Cell-Reg™

Warning

Paw Paw Cell-Reg™ selectively targets specific cells to enhance the overall health of the body. Paw Paw twigs contains acetogenins—active compounds that modulate the production of ATP in mitochondria of specific cells—which affects the viability of specific cells and the growth of blood vessels that nourish them.

A recent clinical study with over 100 participants showed that the paw paw extract, containing a mixture of acetogenins, supports the body's normal cells during times of cellular stress. Paw Paw Cell-Reg is a valuable tool in strengthening and supporting the immune system. ***This patented product is the only standardized acetogenin product available to regulate specific cells.***

Each capsule contains 12.5 mg of standardized paw paw twig extract.

Usage

Take 1 capsule with food four times daily.

Do not take with Co-Q10, Thyroid Support, SOD, or 7-Keto™.

Do not take antioxidant products in combination with Paw Paw Cell-Reg.

Do not exceed the number of recommended servings.

Only those who desire to target specific cells should take this product on a regular/daily basis.

CoQ10, Thyroid Support, and 7-Keto may decrease the effectiveness of this product. Only those with cellular abnormalities should take this product on a regular daily basis.

Miscellaneous Information

The Paw Paw tree is native to the eastern United States. The paw paw standardized extract is taken from the twigs of the Paw Paw tree where the bioactive components called annonaceous acetogenins are most concentrated.

- Patented Formula and Process
- Selective for Abnormal Cells
- The Only Standardized Acetogenin Product Available
- Slows the Production of ATP in Mitochondria of Abnormal Cells
- May Help Modulate the Growth of Blood Vessels Near Abnormal Cells*

Active Ingredient

Paw paw (*Asimina triloba*)

Other Names

Custard apple, Poor man's banana

Parts Used

Twigs, seed.



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Beloved, I pray that in all respects you may prosper and be in good health, just as your soul prospers. (3 John 2)

Dosing

Traditional dosing information for humans is not available for pawpaw.

Active Elements

Acetogenins (asimicin, bullatacin, asimin, asiminacin, asim inecin)

Historical

Pawpaw is indigenous to eastern North American. The pawpaw fruits were used as food by Native Americans. The bark of the tree was used medicinally and to make fish nets.¹ Pawpaw may be of use in adding nutritional value and other qualities to foods.² Extracts of pawpaw seeds, and related tropical species, have been sold as an emetic to induce vomiting.¹⁷

Action

Antineoplastic, antimicrobial

Mechanism

Inhibition of complex I (NADH:ubiquinone oxidoreductase) activity in the mitochondrial electron transport chain.^{1,3-5}

Pawpaw acetogenins appear to be the most concentrated in the small twigs, seeds, and bark of the tree.^{1,7} The nutritional value of pawpaw fruit deteriorates rapidly with either sun or furnace drying.⁸

A majority of the research on pawpaw was done in vitro focusing on the many different acetogenins found in the plant. In particular, most of the acetogenins isolated from pawpaw seeds, bark, or twigs have potent antineoplastic activity against a variety of normal and multi-drug resistant cell lines (A-549, H8, H125, HeLa, HL-60, HT-29, M17, MCF-7, MIA PaCa-2, P388, PO3, PC-3).^{1,6,9-22} In fact, many of the acetogenins have activities from 10 to a billion fold more potent than adriamycin (doxorubicin).^{1,10-12,15,19} The most cytotoxic acetogenins appear to be those with adjacent bis-THF rings.^{1,23-24} One of these investigations also reported no cytotoxic activity for pawpaw acetogenins against non-cancerous cells in the doses used.¹⁸ These compounds appear to provide this cytotoxic action through inhibition of mitochondrial NADH:ubiquinone oxidoreductase which leads to a depletion of ATP in these cells.^{1,3-6} Antimutagenic activity is reported for pawpaw in one study.²⁵

Several researchers report the utility and/or effectiveness of various pawpaw preparations or isolated acetogenins as pesticides.^{1,5,23,26} Specifically, pawpaw appears to be effective in killing cockroaches, including pesticide-resistant strains.²³

Study in rodents found that acetogenins from pawpaw significantly prolonged survival of the animals injected with tumor cells.²⁷

Preliminary research on pawpaw in humans suggests that compounds from this plant may be effective in the eradication of head lice.²⁸

Contraindications

May cause allergic reactions in sensitive individuals.¹

Weak sensitization and irritation in guinea pigs are reported for a pawpaw extract or asimicin.^{1,29}

Due to the reported risk of Parkinson's disease associated with the consumption of pawpaw-related fruits only alkaloid-free preparations should be used.

Toxicology

Large doses of the pawpaw may induce vomiting. The emetic effect of pawpaw appears to limit its toxicity in other regards.

There is one epidemiological study that suggests that consumption of fruit from the tropical cousins of pawpaw (e.g., Graviola) may increase a person's risk for developing Parkinson's disease. The alkaloids in the fruit were thought to be the toxic compounds.³⁰ This effect has not been directly shown with regard to pawpaw, nor has it been investigated in any manner other than this one observational study.

Frequently Asked Questions About Paw Paw Cell-Reg

Q: Why should I avoid supplementation with CoQ₁₀ or products to support the thyroid (Thyroid Support, 7-Keto)?

A: Taking CoQ₁₀ or thyroid products may decrease the effectiveness of Paw Paw Cell-Reg. CoQ₁₀ and thyroid stimulating products increase the mitochondrial ATP energy production. Compounds called acetogenins, found in the Paw Paw Cell-Reg, act by decreasing this energy production. Taking both products would have a

counteractive effect. It is not dangerous to take the products together, but less effective.

Q: Could I separate the time between the time I take CoQ₁₀ (or Thyroid Support) and Paw Paw Cell-Reg? For example, could I take CoQ₁₀ in the morning and Paw Paw at night?

A: NSP suggests to avoid those products altogether while taking Paw Paw Cell-Reg.

Q: What about antioxidants? Should I avoid those as well?

A: Taking *large* amounts of strong antioxidants (Vitamin A, Vitamin C, Vitamin E, SOD, Alpha Lipoic Acid, Grapine, etc.) may decrease the effectiveness of Paw Paw Cell-Reg. Generally antioxidants are beneficial because they squelch free radicals and damaging oxygen species in our cells. With a build-up of free radicals and reactive oxygen species, the cell will undergo a process of programmed cell death. It may be beneficial for this to occur in certain individuals. Taking a multi-vitamin and mineral should be fine.

Q: What are some complementary products?

A: Nature's Noni, Immune Stimulator, and Protease Plus are complementary products to Paw Paw Cell-Reg.

Q: Can I continue to take products like E-Tea® and Pau D'Arco?

A: Yes, those products are fine to continue.

Q: Should I take Paw Paw Cell-Reg prophylactically?

A: No. You wouldn't take antibiotics to prevent infection diseases. Antibiotics are taken after the infection occurs.

Q: Can I take Paw Paw Cell-Reg with other medications?

A: There are no known interactions between Paw Paw and drugs. As mentioned above, thyroid supporting herbs or drugs (e.g., Synthroid) may have a counterproductive effect. However, NSP does not recommend stopping any thyroid drugs, unless under a physician's supervision.

Q: Can I take more Paw Paw Cell-Reg than the label recommendations (one capsule with food four times daily)?

A: No, NSP does not recommend exceeding label recommendations. Paw paw is known to cause nausea

and vomiting when taken in higher doses. It will not work better in higher amounts.

Q: I feel some minor stomach upset occasionally after taking the Paw Paw Cell-Reg. Is there anything to help reduce that?

A: Although some people tend to be more sensitive to the product than others, NSP recommends taking the Paw Paw with some food, so as to decrease the incidence of stomach upset. Ginger is also an herb that can be used with Paw Paw Cell-Reg. Ginger has been used for more than 2000 years. It has a history of use in reducing occasional stomach upset.

Q. What About Graviola?

A. Dr. Jerry McLaughlin, who has performed more research on the benefits of paw paw (*Asimina triloba*) than anyone else in the world, was directly responsible for over 25 years of studies at Purdue University into the anti-tumor properties of a group of plant chemicals that are known as annonaceous acetogenins, found in paw paw and a few related species, that interfere with the cellular production of energy. Dr. McLaughlin and his team of researchers considered Graviola (*Annona muricata*, also known as Guanabana, Brazilian Cherimoya, or Brazilian paw paw) as an alternative to paw paw as a source for these annonaceous acetogenins. They rejected Graviola as a viable alternative because it contains much weaker compounds (on the order of hundreds of times weaker) than paw paw, and is much more difficult—if not impossible—to standardize. In spite of Dr. McLaughlin's published findings, many of the manufacturers of Graviola products suggest taking their Graviola in conjunction with the very supplements—Coenzyme Q₁₀, vitamin C, other antioxidants, and other supplements intended to increase the production of cellular energy (see "Contraindications" above)—that Dr. McLaughlin discovered inhibit the therapeutic action of *Asimina triloba*. (*Source:* Several personal discussions with Dr. McLaughlin in 2003.)

There is one epidemiological study that suggests that consumption of fruit from the tropical cousins of paw-paw (e.g., Graviola) may increase a person's risk for developing Parkinson's disease. The alkaloids in the fruit were thought to be the toxic compounds.³⁰ This effect has not been directly shown with regard to pawpaw, nor has it been investigated in any manner other than this

one observational study.

References

1. *The Review of Natural Products*. Ed. Ara Dermarderosian. Facts and Comparisons Publishing Group. St. Louis, Missouri. 1998
2. Adeyemi IA, Soluade EO. "Development and quality evaluation of pawpaw-ogi." *Plant Foods Hum Nutr* 1993 Nov;44(3):213-20.
3. Myoshi H, et al. "Essential structural factors of annonaceous acetogenins as potent inhibitors of mitochondrial complex I." *Biochim Biophys Acta* 1998 Jul 20;1365(3):443-52.
4. Alfonso D, et al. "SARs of annonaceous acetogenins in rat liver mitochondria." *Nat Toxins* 1996;4(4):181-8.
5. Landolt JL, et al. "Determination of structure-activity relationships of Annonaceous acetogenins by inhibition of oxygen uptake in rat liver mitochondria." *Chem Biol Interact* 1995 Oct 20;98(1):1-13.
6. Morre DJ, et al. "Mode of action of bullatacin, a potent antitumor acetogenin: inhibition of NADH oxidase activity of HeLa and HL-60, but not liver, plasma membranes." *Life Sci* 1995;56(5):343-8.
7. Ratnayake S, et al. "Evaluation of various parts of the paw paw tree, *Asimina triloba* (Annonaceae), as commercial sources of the pesticidal annonaceous acetogenins." *J Econ Entomol* 1992 Dec;85(6):2353-6.
8. Mugula JK, et al. "Production and storage stability of non-alcoholic pawpaw beverage powder." *Plant Foods Hum Nutr* 1994 Sep;46(2):167-73.
9. Woo MH, et al. "Asitrilobins C and D: two new cytotoxic mono-tetrahydrofuran annonaceous acetogenins from *Asimina triloba* seeds." *Bioorg Med Chem* 2000 Jan;8(1):285-90.
10. Kim EJ, et al. "Asitrocin, (2,4)-cis- and trans-asitrocinones: novel bioactive mono-tetrahydrofuran acetogenins from *Asimina triloba* seeds." *J Nat Prod* 2000 Nov;63(11):1503-6.
11. Woo MH, et al. "Asifrilobins A and B: cytotoxic mono-THF annonaceous acetogenins from the seeds of *Asimina triloba*." *Phytochemistry* 1999 Mar;50(6):1033-40.
12. He K, et al. "Additional bioactive annonaceous acetogenins from *Asimina triloba* (Annonaceae)." *Bioorg Med Chem* 1997 Mar;5(3):501-6.
13. Oberlies NH, et al. "The Annonaceous acetogenin bullatacin is cytotoxic against multidrug-resistant human mammary adenocarcinoma cells." *Cancer Lett* 1997 May 1;115(1):73-9.
14. Oberlies NH, et al. "Structure-activity relationships of diverse Annonaceous acetogenins against multidrug resistant human mammary adenocarcinoma (MCF-7/Adr) cells." *J Med Chem* 1997 Jun 20;40(13):2102-6.
15. Zhao GX, et al. "The absolute configuration of adjacent bis-THF acetogenins and asimincin, a novel highly potent asimicin isomer from *Asimina triloba*." *Bioorg Med Chem* 1996 Jan;4(1):25-32.
16. He K, et al. "Three new adjacent bis-tetrahydrofuran acetogenins with four hydroxyl groups from *Asimina triloba*." *J Nat Prod* 1996 Nov;59(11):1029-34.
17. Zhao GX, et al. "(2,4-cis)-asimicinone and (2,4-trans)-asimicinone: two novel bioactive ketolactone acetogenins from *Asimina triloba* (Annonaceae)." *Nat Toxins* 1996;4(3):128-34.
18. Oberlies NH, et al. "Tumor cell growth inhibition by several Annonaceous acetogenins in an in vitro disk diffusion assay." *Cancer Lett* 1995 Sep 4;96(1):55-62.
19. Woo MH, et al. "Asimilobin and cis- and trans-murisolinones, novel bioactive Annonaceous acetogenins from the seeds of *Asimina triloba*." *J Nat Prod* 1995 Oct;58(10):1533-42.
20. Zhao GX, et al. "Asimin, asimincin, and asimincin: novel highly cytotoxic asimicin isomers from *Asimina triloba*." *J Med Chem* 1994 Jun 24;37(13):1971-6.
21. Zhao GX, et al. "Biologically active acetogenins from stem bark of *Asimina triloba*." *Phytochemistry* 1993 Jul;33(5):1065-73.
22. Zhao G, et al. "Additional bioactive compounds and trilobacin, a novel highly cytotoxic acetogenin, from the bark of *Asimina triloba*." *J Nat Prod* 1992 Mar;55(3):347-56.
23. Alali FQ, et al. "Annonaceous acetogenins as natural pesticides: potent toxicity against insecticide-susceptible and -resistant German cockroaches (Diptera: Blattellidae)." *J Econ Entomol* 1998 Jun;91(3):641-9.
24. Shimada H, et al. "The localisations in liposomal membranes of the tetrahydrofuran ring moieties of the annonaceous acetogenins, annonacin and sylvaticin, as determined by ¹H NMR spectroscopy."

Pharmacol Res 1998 May;37(5):357-64.

25. Bofting KJ, et al. "Antimutagens in food plants eaten by Polynesians: micronutrients, phytochemicals and protection against bacterial mutagenicity of the heterocyclic amine 2-amino-3-methylimidazo[4,5-f]quinoline." *Food Chem Toxicol* 1999 Feb-Mar;37(2-3):95-103.
26. Martin JM, et al. "Chemical defense in the zebra swallowtail bunertly, *Eurytides marcellus*, involving annonaceous acetogenins." *J Nat Prod* 1999 Jan; 62(1):2-4.
27. Ahammadsahib KI, et al. "Mode of action of bullatacin: a potent antitumor and pesticidal annonaceous acetogenin." *Life Sci* 1993;53(14):1113-20.
28. McCage CM, et al. "Development of a paw paw herbal shampoo for the removal of head lice." *Phytomedicine* 2002 Dec;9(8):743-8.
29. Avalos J, et al. "Guinea pig maximization test of the bark extract from pawpaw, *Asimina triloba* (Annonaceae)." *Contact Dermatitis* 1993 Jul;29(1):33-5.
30. Caparros-Lefebvre D, Elbaz A. "Possible relation of atypical parkinsonism in the French West Indies with consumption of tropical plants: a case-control study. Caribbean Parkinsonism Study Group." *Lancet* 1999 Jul 24;354(9175):281-6.
31. Alali FQ, et al. "Annonaceous acetogenins: recent progress." *J Nat Prod* 1999 Mar;62(3):504-40.
32. Wood R, Peterson S. "Lipids of the pawpaw fruit. *Asimina triloba*." *Lipids* 1999 Oct;34(10):1099-106.
33. Shimada H, et al. "Membrane conformations and their relation to cytotoxicity of asimicin and its analogues." *Biochemistry* 1998 Jan 20;37(3):854-66.
34. Gu ZM, et al. "Screening for Annonaceous acetogenins in bioactive plant extracts by liquid chromatography/mass spectrometry." *J Nat Prod* 1997 Mar;60(3):242-8.
35. Fang XP, et al. "Structural revisions of some non-adjacent bis-tetrahydrofuran annonaceous acetogenins." *J Nat Prod* 1993 Jul;56(7):1095-100.
36. Rupprecht JK, et al. "Annonaceous acetogenins: a review." *J Nat Prod* 1990 Mar-Apr;53(2):237-78.