



GRAVIOLA MAX

**A proprietary blend of two powerful graviola plants
Graviola (*Annona muricata*) &
Mountain Graviola (*Annona montana*)**



Exclusively from Raintree Nutrition. . . of course!

- M Raintree Nutrition, the expert in South American and rainforest medicinal plants, was the first company to introduce Graviola (*Annona muricata*) to the American and European natural products market seven years ago.**
- M A new and powerful species of graviola has emerged from the rainforest, and once again, Raintree is the first to bring it to consumers, health practitioners and retail stores.**
- M New and powerful acetogenin chemicals have been discovered in Mountain Graviola (*Annona montana*) which scientists report have the same dynamic actions as those found in regular Graviola.**
- M These two power plants of the Amazon contain a total of 108 documented and studied acetogenin chemicals. More active chemicals means more actions. Graviola Max delivers almost 4 times as many acetogenins as Paw-Paw!**

Brought to you by. . .



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GRAVIOLA-MAX



120 capsules / 600 mg each

Retail Price: \$19.95

Some of the active ingredients documented, researched, and verified in graviola are a group of Annonaceous acetogenins which are only found in the Annonaceae plant family. Graviola (*Annona muricata*) has 82 different acetogenin chemicals (in 10 distinct types). Mountain graviola (*Annona montana*) contains the main annonacin chemical that graviola does, and, it has 26 more acetogenin chemicals not found in graviola (in 6 distinct types)! Graviola Max combines both species of graviola (*Annona muricata* and *Annona montana*) to provide 12 different types of acetogenins—108 distinct powerful chemicals in all. Compare that to only 28 acetogenin chemicals found in the American paw paw. . . Graviola Max delivers almost four times more acetogenins than paw paw! For more complete information on these power plants of the rainforest, please see the Raintree Nutrition internet website and the online Tropical Plant Database.

Traditional Uses:* for cancer (all types); as a broad-spectrum internal and external antimicrobial to treat bacterial and fungal infections; for internal parasites and worms; for high blood pressure; for depression, stress, and nervous disorders

Ingredients: A proprietary blend of graviola leaf and stem (*Annona muricata*), and mountain graviola leaf and stem (*Annona montana*). No binders, fillers, or additives are used—just 100% pure plants, rich in the naturally occurring plant chemicals that these plants are regarded for.

Suggested Use: Take 3 capsules 3-4 times or as directed by a healthcare professional.

Contraindications:

- Not to be used during pregnancy or breast-feeding.
- Graviola has demonstrated hypotensive, vasodilator, and cardiodepressant activities in animal studies. People with low blood pressure should monitor their blood pressure accordingly.

Drug Interactions: None have been reported; however, based on animal studies, graviola may potentiate anti-hypertensive and cardiac depressant drugs.

Other Practitioner Observations:

- Graviola has demonstrated *in vitro* antimicrobial properties. Chronic, long-term use of this plant might lead to some die-off of friendly bacteria in the digestive tract. Supplementing the diet with probiotics and digestive enzymes may be helpful to counteract this possible effect.
- Graviola has demonstrated emetic properties in one animal study with pigs. Large single dosages may cause nausea or vomiting. Reduce the usage accordingly or take with a meal if nausea occurs.
- Drinking plenty of water (at least 8 glasses a day) is helpful to reduce Herxheimer reactions and flush dead and dying cells from the body.
- One of three documented mechanisms of action of graviola is by decreasing energy to abnormal cells (called an ATP-inhibitor). Taking supplements that increase cellular energy (like CoQ10) will counteract or disable this one mechanism of action of graviola (however, the other two mechanisms of action will be unaffected).

Clinical Documentation and Research:* This Raintree product has not been the subject of any clinical research. Available third-party documentation and clinical research these graviola plants can be found at the Raintree website. A partial listing of published research and third-party documentation is shown below:

Graviola (*Annona muricata*)

Takahashi, J. A., et al. "Antibacterial activity of eight Brazilian Annonaceae plants." *Nat. Prod. Res.* 2006; 20(1): 21-6.

Kojima, N. "Systematic synthesis of antitumor Annonaceous acetogenins" *Yakugaku Zasshi.* 2004; 124(10): 673-81.

Yuan, S. S., et al. "Annonacin, a mono-tetrahydrofuran acetogenin, arrests cancer cells at the G1 phase and causes cytotoxicity in a Bax- and caspase-3-related pathway." *Life Sci.* 2003 May; 72(25): 2853-61.

Liaw, C. C., et al. "New cytotoxic monotetrahydrofuran Annonaceous acetogenins from *Annona muricata*." *J. Nat. Prod.* 2002; 65(4): 470-75.

Gonzalez-Coloma, A., et al. "Selective action of acetogenin mitochondrial complex I inhibitors." *Z. Naturforsch.* 2002; 57(11-12): 1028-34.

Chang, F. R., et al. "Novel cytotoxic Annonaceous acetogenins from *Annona muricata*." *J. Nat. Prod.* 2001; 64(7): 925-31.

Padma, P., et al. "Effect of *Annona muricata* and *Polyalthia cerasoides* on brain neurotransmitters and enzyme monoamine oxidase following cold immobilization stress." *J. Natural Remedies* 2001; 1(2): 144-46.

Jaramillo, M. C., et al. "Cytotoxicity and antileishmanial activity of *Annona muricata* pericarp." *Fitoterapia.* 2000; 71 (2): 183-6.

Betancur-Galvis, L., et al. "Antitumor and antiviral activity of Colombian medicinal plant extracts." *Mem. Inst. Oswaldo Cruz.* 1999; 94(4): 531-35.

Kim, G. S., et al. "Muricoreacin and murihexocin C, mono-tetrahydrofuran acetogenins, from the leaves of *Annona muricata*." *Phytochemistry.* 1998; 49(2): 565-71.

Kim, G. S., et al. "Two new mono-tetrahydrofuran ring acetogenins, anomuricin E and muricapentocin, from the leaves of *Annona muricata*." *J. Nat. Prod.* 1998; 61(4): 432-36.

Nicolas, H., et al. "Structure-activity relationships of diverse Annonaceous acetogenins against multidrug resistant human mammary adenocarcinoma (MCF-7/Adr) cells." *J. Med. Chem.* 1997; 40(13): 2102-6.

Zeng, L., et al. "Five new monotetrahydrofuran ring acetogenins from the leaves of *Annona muricata*." *J. Nat. Prod.* 1996; 59(11): 1035-42.

Wu, F. E., et al. "Two new cytotoxic monotetrahydrofuran Annonaceous acetogenins, anomuricins A and B, from the leaves of *Annona muricata*." *J. Nat. Prod.* 1995; 58(6): 830-36.

Wu, F. E., et al. "Additional bioactive acetogenins, anomutacin and (2,4-trans and cis)-10R-annonacin-A-ones, from the leaves of *Annona muricata*." *J. Nat. Prod.* 1995; 58(9): 1430-37.

Wu, F. E., et al. "New bioactive monotetrahydrofuran Annonaceous acetogenins, anomuricin C and muricatocin C, from the leaves of *Annona muricata*." *J. Nat. Prod.* 1995; 58(6): 909-5.

Wu, F. E., et al. "Muricatocins A and B, two new bioactive monotetrahydrofuran Annonaceous acetogenins from the leaves of *Annona muricata*." *J. Nat. Prod.* 1995; 58(6): 902-8.

Sundarrao, K., et al. "Preliminary screening of antibacterial and antitumor activities of Papua New Guinean native medicinal plants." *Int. J. Pharmacog.* 1993; 31(1): 3-6.

Heinrich, M., et al. "Parasitological and microbiological evaluation of Mixe Indian medicinal plants (Mexico)." *J. Ethnopharmacol.* 1992; 36(1): 81-5.

Mountain Graviola (*Annona montana*)

Liaw, C. C., et al. "Novel cytotoxic monotetrahydrofuranic Annonaceous acetogenins from *Annona montana*." *Bioorg. Med. Chem.* 2005 Aug; 13(15): 4767-76.

Tormo, J. R., et al. "*In vitro* antitumor structure-activity relationships of threo/trans/threo/trans/erythro bis-tetrahydrofuranic acetogenins: correlations with their inhibition of mitochondrial complex I." *Oncol. Res.* 2005; 15(3): 129-38.

Liaw, C. C., et al. "Montacin and cis-montacin, two new cytotoxic monotetrahydrofuran Annonaceous acetogenins from *Annona montana*." *J. Nat. Prod.* 2004; 67(11): 1804-8.

Liaw, C. C., et al. "Nine new cytotoxic monotetrahydrofuranic Annonaceous acetogenins from *Annona montana*." *Planta Med.* 2004; 70(10): 948-59.

Kojima, N. "Systematic synthesis of antitumor annonaceous acetogenins." *Yakugaku Zasshi.* 2004; 124(10): 673-81.

Wang, L. Q., et al. "Annonaceous acetogenins from the leaves of *Annona montana*." *Bioorg. Med. Chem.* 2002; 10(3): 561-5.

Wang, L. Q., et al. "Cytotoxic mono-tetrahydrofuran ring acetogenins from leaves of *Annona montana*." *Planta Med.* 2001 Dec; 67(9): 847-52.

Mootoo, B. S., et al. "Three novel monotetrahydrofuran annonaceous acetogenins from *Annona montana*." *J. Nat. Prod.* 2000; 63(6): 807-11.

Yang, S., et al. "Chemical constituents of Annonaceae plants and their antitumor activities." *Zhongguo Yi. Xue. Ke. Xue. Yuan. Xue. Bao.* 2000 Aug; 22(4): 376-82.

Wang, L. Q., et al. "Four mono-tetrahydrofuran ring acetogenins, montanacins B-E, from *Annona montana*." *Chem. Pharm. Bull.* 2000; 48(8): 1109-13.

Wu, Y. C., et al. "Bioactive constituents from the stems of *Annona montana*." *Planta Med.* 1995 Apr; 61(2): 146-9.

Jossang, A., et al. "Annomonysvin: a new cytotoxic gamma-lactone-monotetrahydrofuranyl acetogenin from *Annona montana*." *J. Nat. Prod.* 1991 Jul-Aug; 54(4): 967-71.

* The statements contained herein have not been evaluated by the Food and Drug Administration.
This product is not intended to treat, cure, or prevent any disease.

ACETOGENIN COMPARISON

Graviola (*Annona muricata*) has 82 different acetogenin chemicals (in 10 distinct types). Mountain Graviola (*Annona montana*) contains as much annonacin (one of the main chemicals studied) as regular graviola does... and it has 26 more acetogenin chemicals not found in graviola (in 6 distinct types). Graviola-Max delivers almost four times more acetogenins than paw paw!

Type of Acetogenin	Graviola	Mountain Graviola	Paw Paw
Type 1: Vicinal dihydroxylated and olefinic linear acetogenins	7	-	-
Type 2: Olefenic and acetylenic linear acetogenins	9	-	-
Type 3: Mono-epoxy olefenic acetogenins	5	-	-
Type 4: Bis-epoxy acetogenins	3	1	-
Type 5: Dihydroxylated acetogenins	8	-	-
Type 6: Trihydroxylated and dihydroxylated ketonic acetogenins	4	2	3
Type 7: Tetrahydroxylated and trihydroxylated ketonic acetogenins	9	10	5
Type 8: Polyhydroxylated and tetrahydroxylated ketonic acetogenins	12	7	-
Type 9: THF a-monohydroxylated acetogenins	21	-	-
Type 10: Mono-THF iso-acetogenins	1	2	4
Type 11: THF-Hydroxy acetogenins	-	4	-
Type 12: Trihydroxylated and tetrahydroxylated acetogenins	-	-	4
Type 13: Tetrahydroxylated and pentahydroxylated acetogenins	-	-	9
Type 14: Adjacent bis-THF a-monohydroxylated acetogenins	3	-	1
Type 15: Non-adjacent bis-THF acetogenins	-	-	-
Type 16: Iso-bis-THF acetogenins	-	-	1
Type 17: Non-adjacent THF-THP acetogenins	-	2	-
Total acetogenins documented in the species	82	28	28

<i>Annona muricata</i> (Graviola)	graviola cont.	graviola cont.	<i>Annona montana</i> (Mountain graviola)	<i>Asimina triloba</i> (Paw Paw)
1. cohibin-A	5. 15-oleylsolamin	9. muricatetrocin-A	4. diepoxymontin	6. asiminenin-B
1. cohibin-B	6. murisolin	9. muricatetrocin-B	6. montalycin-A	6. cis-murisolin
1. cohibin-C	6. corossolin	9. muricatin-A	6. montalycin-B	6. murisolin-A
1. cohibin-D	6. corossolone	9. muricatin-B	7. annonacin	7. asitrilobin-A
1. montecristin	6. cis-reticulatacin	9. muricoreacin	7. annomontacin	7. asitrilobin-B
1. muricatenol	7. annonacin	9. muricin-A	7. annomontanin-A	7. asitrilobin-C
1. murihexol	7. annomutacin	9. muricin-B	7. cis-annoreticuin	7. asitrilobin-D
2. muridienin-1	7. cis-annonacin	9. muricin-C	7. montalycin-C	7. asitrocin
2. muridienin-2	7. cis-annonacinone	9. muricin-D	7. montalycin-D	10. asitrocine
2. muridienin-3	7. cis-annomontacin	9. muricin-E	7. montalycin-E	10. annonacinone-A
2. muridienin-4	7. cis-goniothalamycin	9. muricin-F	7. montalycin-F	10. gigantetrocinone
2. chatenaytrienin-1	7. arianacin	9. muricin-H	7. montalycin-I	10. murisolinone
2. chatenaytrienin-2	7. javoricin	9. muricin-I	7. montalycin-J	12. asimicin
2. chatenaytrienin-3	7. muricin-G	9. murihexocin-A	8. annomoncin	12. OH-asimicin
2. chatenaytrienin-4	8. annohexocin	9. murihexocin-B	8. montanacin	12. OH-trilobacin
2. muricadienin	8. muricatalicin	9. murihexocin-C	8. montacin	12. trilobacin
3. epomuricenin-A	8. annomuricin-E	10. annomuricinone-D	8. cis-montacin	13. bullatin
3. epomuricenin-B	8. muricapentocin	14. annocatacin-A	8. annomontanin-B	13. bullanin
3. epoxyurin-A	8. muricatin-C	14. annocatacin-B	8. montanacin-B	13. trilobin
3. epoxyurin-B	8. annomuricin-A	14. robustocin	8. montanacin-C	13. asitribin
3. sabadelin	8. annomuricin-B		10. montanacin-G	13. asimocin
4. diepomuricanin-A	8. annomuricin-C		10. montanacin-F	13. bullatetrocin
4. corepoxylone	8. muricatin-C		11. annomontanin-C	13. asiminacin
4. coronin	8. muricatocin-A		11. montanacin-H	13. asimin
5. solamin	8. muricatocin-B		11. montanacin-I	13. asiminecin
5. cis-solamin	8. muricatocin-C		11. montanacin-J	14. asimilobin
5. cis-panatellin	9. annopentocin-A		17. montanacin-D	15. trilobalacin
5. cis-uvariamicin-IV	9. annopentocin-B		17. montanacin-E	16. trilobacinone
5. cis-uvariamicin-I	9. annopentocin-C			
5. cis-reticulatacin	9. gigantetrocin-B			
5. 15-palmitoylsolamin	9. muricatalin			