



Memorandum

DOCKETS TRANSMITTAL MEMO

8561 '03 NOV 20 12:05

Date: *Oct. 27, 2003*
From: Interdisciplinary Scientist/Pharmacist, Division of Dietary Supplement Programs,
Office of Nutritional Products, Labeling and Dietary Supplements, HFS-810
Subject: 75-Day Premarket Notification of New Dietary Ingredients
To: Dockets Management Branch, HFA-305

Subject of the Notification:

Firm: PanGenomics, Inc.

Date Received by FDA: 12/31/02

90-Day Date: 3/31/03

In accordance with the requirements of section 413(a) of the Federal Food, Drug, and Cosmetic Act, the attached 75-day premarket notification and related correspondence for the aforementioned substance should be placed on public display in docket number 95S-0316 as soon possible since it is past the 90-day date. Thank you for your assistance.

Gloria Chang
Gloria Chang, Interdisciplinary Scientist, HFD 810

Attachments

95S-0316

RPT 164



MAR 14 2003

Michael C. Son, Ph.D., RAC
Director of Regulatory Affairs
PanGenomic, Inc.
3699 Wilshire Blvd.
Suite 700-19
Los Angeles, California 90010

Dear Dr. Son:

This is in response to your notification dated December 30, 2002 to the Food and Drug Administration (FDA) pursuant to 21 U.S.C. 350b(a)(2) and 21 Code of Federal Regulations (CFR) Part 190.6. FDA received and filed your notification on December 31, 2002. Your notification concerns the substance, PG102 (concentrated water extract powder of the dried hardy kiwi fruit, *Actinidia arguta*), that you assert is a new dietary ingredient. Your notification states that, under the recommended conditions of use, it is recommended for balancing the immune system. The recommended daily serving level is 3-6 tablets (500 mg per tablet) per day with a maximum daily dose of 30 tablets which you indicate is equivalent to 90 dried hardy kiwi fruits or 15 grams (g) of the concentrated water extracted powder. You also stated that you plan to label the product containing PG102 with the following warning: "WARNING: DO NOT CONSUME IF ALLERGIC TO KIWI FRUIT. If unknown, consult with your physician before using this product."

Under 21 U.S.C. 350b(a)(2), the manufacturer or distributor of a dietary supplement that contains a new dietary ingredient is required to submit certain information to FDA at least 75 days before a new dietary ingredient or a dietary supplement containing it is introduced or delivered for introduction into interstate commerce. This information must include the basis on which the manufacturer or distributor has concluded that the new dietary ingredient or a dietary supplement containing the new dietary ingredient will reasonably be expected to be safe. FDA reviews this information to determine whether it provides an adequate basis for such a conclusion. Under 21 U.S.C. 350b(a)(2), there must be a history of use or other evidence of safety establishing that the dietary ingredient, when used under the conditions recommended or suggested in the product's labeling, will reasonably be expected to be safe. If this requirement is not met, the new dietary ingredient or dietary supplement containing it is deemed to be adulterated under 21 U.S.C. 342(f)(1)(B), because there is inadequate information to provide reasonable assurance that the new dietary ingredient does not present a significant or unreasonable risk of illness or injury.

ORIGINAL

PG102

(New Dietary Ingredient Notification)

**Division of Standards and Labeling Regulations
Office of Nutritional Products, Labeling,
and Dietary Supplements (HFS-820)
Center for Food Safety and Applied Nutrition
Food and Drug Administration**

December 26, 2003

PanGenomics

ORIGINAL

New Dietary Ingredient Notification
PG102 (*Actinidia arguta*; "baby kiwi")

Division of Standards and Labeling Regulations
Office of Nutritional Products, Labeling, and Dietary Supplements (HFS-820)
Center for Food Safety and Applied Nutrition
Food and Drug Administration
5100 Paint Branch Parkway
College Park, MD. 20740-3835

December 30, 2002

RE: Notification of New Dietary Supplement

To Whom It May Concern:

Pursuant to Section 413(a)(2) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 350b(a)(2)), PanGenomics, Inc. wishes to inform the Food and Drug Administration that we will market a new dietary ingredient, PG102, water extract powder of the dried edible hardy kiwifruit, *Actinidia arguta*. Accordingly, two copies of this notification are submitted for your reference. The following information is provided herewith.

1. Name and address of the manufacturer and distributor

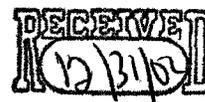
PanGenomics, Inc.
3699 Wilshire Blvd.
Suite 700-19
Los Angeles, CA. 90010
Ph: 213-385-6330, Fax: 213-385-6360

2. New dietary ingredient:

PG102 is a water extract powder of dried hardy kiwifruit, *Actinidia arguta*.

3. Description of the dietary supplement or dietary supplement that contains the new dietary ingredient.

Hardy kiwifruits (*Actinidia arguta*) belong to the family *Actinidiaceae* that is native to northern China, Korea, Siberia and Japan. Both dried and fresh hardy kiwifruits have been consumed as food for long time and taste very similarly with common kiwi, *Actinidia deliciosa*. In Asia, hardy kiwifruits are commonly stored dried to increase storage life for later uses such as for food and medicine. The fruit averages between 6.5 to 15 grams (fresh) or 0.7 to 2.0



BY

grams (dried) and they are high in Vitamin C and dietary fiber with good levels of Vitamin E and antioxidants with no disease or insect problems.

- (i) Level of new dietary ingredient in the product: Each tablet will contain up to 500 mg of PG102.
- (ii) Recommended or Suggested Use: It is recommended for balancing the immune system with 3-6 tablets (500 mg/tablet) per day (1-2 tablets; 3 times/day) with daily maximum dose of 30 tablets (500 mg/tablet, equivalent to 90 dried hardy kiwifruits or 15 g of water extract powder of dried hardy kiwifruits).
- (iii) A recent report from Southampton General Hospital warned that a growing number of people are proving allergic to Kiwi fruit. Though the findings are not conclusive and based on more commonly sold kiwi, *Actinidia deliciosa*, we will take precautionary measures to protect the safety of the consumers and appropriately label the product. Therefore, the products containing PG102 will bear the following warning label: "WARNING: DO NOT CONSUME IF ALLERGIC TO KIWI FRUIT. If unknown, consult with your physician before using this product."

4. History of use, Market History, Safety Data, and Published References.

In addition to the existence and consumption of hardy kiwifruits prior to October 15, 1994, PanGenomics, Inc. has concluded that the dietary ingredient, PG102 (water extract powder of dried hardy kiwifruit, *Actinidia arguta*) will reasonably be expected to be safe under the recommended daily dose and conditions of use based on its consumption history, toxicity studies, and the following information provided herewith.

Attached please find the supporting materials for safety and pertinent product information. They include the Product Specifications, Manufacturing Process, summary of toxicity studies, marketing and consumption history, and related materials.

a. History

Hardy kiwifruits, *Actinidia arguta* (also known as "arguta" and under the marketing names "baby kiwi" or "cocktail kiwi" or "grape kiwi" in United States, Canada, and New Zealand), is a commercially available crop in many countries including United States. Small commercial plantings of baby kiwis have been established in Canada, France, Germany, Italy, New Zealand and the United States, with local selections being promoted. Baby kiwis have been in cultivation in the

United States since the early 1900's. Oregon is the world's largest production region of baby kiwis (*A. arguta*) where the cultivation procedures have been extensively studied, documented, and promoted by state and federal agencies. There are approximately, 100 acres in Oregon alone in addition to the 15 acres in eastern Northern America, 50 acres in New Zealand, and 25 acres in other areas of the world (See Attachment I).

b. Market History

Baby kiwis are bite-size kiwi but with fuzzless, smooth skin, and are about the size and shape of grapes. The fruits have the sweet taste and commonly consumed alone or added to salads. They are packed with vitamin C, about twice the content of oranges. With as much potassium as a banana, these fruits are also high in vitamin E, carotenoids, folic acid and manganese, low in sodium, and virtually cholesterol free. Fruits of baby kiwis have had a good reception in the San Francisco and Los Angeles markets, fetching remarkably high prices, and increasing amounts of both fresh fruit and processed products are being exported. Baby kiwis are commonly sold through specialty online markets and farmer's markets elsewhere. It has also gained steady popularity among restaurants.

According to Cutting Moon Ranch, one of two major marketer/distributor of baby kiwis, approximately 125,000 to 135,000 pounds of baby kiwis (marketed under "Wee-Ki Berries") are produced from their 15 acre plantings in Oregon. The other major marketer/distributor, Hurst's Berry Farm, produced approximately 100,000 pounds of baby kiwis of which 44,783 pounds were sold in the fresh fruit market in Japan (See Attachment L). In addition to the fresh consumption of baby kiwis, there has been significant increase in the usage of baby kiwis to the daily diet such as sauces, wine, jam, deserts, etc. (See Attachment K)

c. Product Manufacturing and Quality Control Measures

Various measures have been incorporated to ensure the highest quality and consistency of the PG102 ingredient and products. Dried hardy kiwifruit, *Actinidia arguta*, is obtained from a certified supplier in Korea along with the Certificate of Botanical Identity approved by certified pharmacognosist (See Attachment C). Following a strict and well-controlled processing/manufacturing protocol, PG102 powder is obtained from dried baby kiwis (See Attachment B). Then random samples are selected for quality control measures using selected chemical markers (inositol standard and internal standard) for HPLC analysis (See Attachment D). Once they pass the quality control tests,

certificate of analysis is generated for each batch of PG102 (See Attachment E). The production of the finished product including the tableting of PG102 is outsourced to a KGMP-compliant (which is equivalent to U.S. FDA's GMP in Korea) contract manufacturing facility in Seoul, Korea (See Attachment F).

d. Safety

(i) Summary of toxicity study results

Though hardy kiwifruits are commercially available and commercial planting information can be obtained from various state and federal agricultural agencies, such as USDA, we have conducted toxicity studies to assure the safety of PG102. According to our repeated oral toxicity test results of PG102, no mortality and no abnormalities were found. (See attachment G)

(ii) Summary of translated Korean documents

Many of the historical literatures, including government documents, describe the usage and consumption of baby kiwis as a fruit and also as herbal medicine. According to Korean Food and Drug Administration, hardy kiwifruit (*Actinidia arguta*) is listed as a fruit in '(5) Fruits' among the '28 Main Ingredients' section in Chapter 3 of "The Criteria and Standard of General Food" of the current version of the Food Code (See Attachment J). Furthermore, Korea's National Rural Living Science Institute, R.D.A. has analyzed and provided Nutrition/Supplement Facts of *A. arguta*. (See Attachment H)

(iii) Summary of scientific references

There have been a number of scientific publications on *Actinidia arguta* mainly on focused to the nutrient contents during maturation of the fruit. Safety of the hardy kiwifruit consumption has not been challenged being a close relative to the normal kiwi (*Actinidia deliciosa*). However, studies done up to this point have not shown that *Actinidia arguta* has any significant storage diseases or disorders (Kempler 1995, Hassall et al. 1998, Prasad et al. 1991).

(iv) Summary of Internet references

There are ample sources (information obtained by federal or state funded agencies) on commercialization and cultivation methods of *A. arguta*, particularly from Oregon where the first major

commercial crops were planted. During its season, baby kiwis can be purchased from specialty farmers markets and online specialty markets. (Attachment M)

5. Signature of the person designated by the manufacturer of the dietary ingredient.



Michael C. Son, Ph.D., RAC
Director of Regulatory Affairs
PanGenomics, Inc.

Should you have any questions or comments on this notification, please contact the undersigned.

Sincerely yours,

Michael C. Son, Ph.D., RAC
Director of Regulatory Affairs
PanGenomics, Inc.

Attachments:

- A. Product Specification
- B. Manufacturing Process
- C. Certificate of Botanical Identity (dried *A. arguta*)
- D. Quality Control Measures
- E. Certificate of Analysis (PG102 powder batch)
- F. Certificate of Good Manufacturing Practice (by Korea FDA)
- G. Toxicity Studies
- H. Supplement Facts
- I. History of *A. arguta* by Dr. Strik, Professor of Horticulture, Extension Berry Crops, Oregon State University
- J. Food Ingredient Classification of *A. arguta* (by Korea FDA)
- K. Marketing Information I by Cutting Moon Ranch (Oregon)
- L. Marketing Information II by Hurst Berry Farm (Oregon)
- M. Internet References



A. Product Specifications

Product Specifications

Product Name: PG102

Manufacturer: PanGenomics, Inc.
3699 Wilshire Blvd. Suite 700-19
Los Angeles, CA. 90010

Content: Water extract powder of dried hardy kiwifruit, *Actinidia arguta*

New Dietary Ingredient: PG102, a water extract powder dried hardy kiwifruit

Description: Dark Brown with characteristic odor

Heavy metals: Less than 30 PPM (total heavy metals)

Loss on Drying: Less than 8.0 %

Tar Pigment: Not Detected

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B. Manufacturing Process

Manufacturing Process

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1. Purchase of dried hardy kiwifruit, *Actinidia arguta* (family *Actinidiaceae* that is native to northern China, Korea, Siberia and Japan).
2. Weigh 50 kg of dried *Actinidia arguta*, crash into chips, and suspend in 600 liter distilled water.
3. Boil (95 to 100 °C) and extract for 4 hours to obtain crude "PG102" solution using reflux condenser.
4. Repeat the same process (#3) twice.
5. Filter (10 µm), dry, and pulverize crude "PG102" solution.
6. Perform quality control tests.
7. Packaging of final "PG102" powder.

C. Certificate of Botanical Identity (dried *A. arguta*)

CERTIFICATE OF IDENTITY

1. Data of the requesting

Name : PanGenomics, Inc.
Address : 3699 Wilshire Blvd. Suite 700-19
Los Angeles, CA. 90010

2. Data of the sample

Description : brown dried fruit
Amount : 100kg

3. Identity : "The sample has been identified as *Actinidia arguta*."

I hereby certify that the above mentioned is true and correct.

2002. 9. 25



Ok Pyo Zee, Ph.D. Professor
Dept. of Pharmacology
College of Pharmacy
SungKyunKwan University

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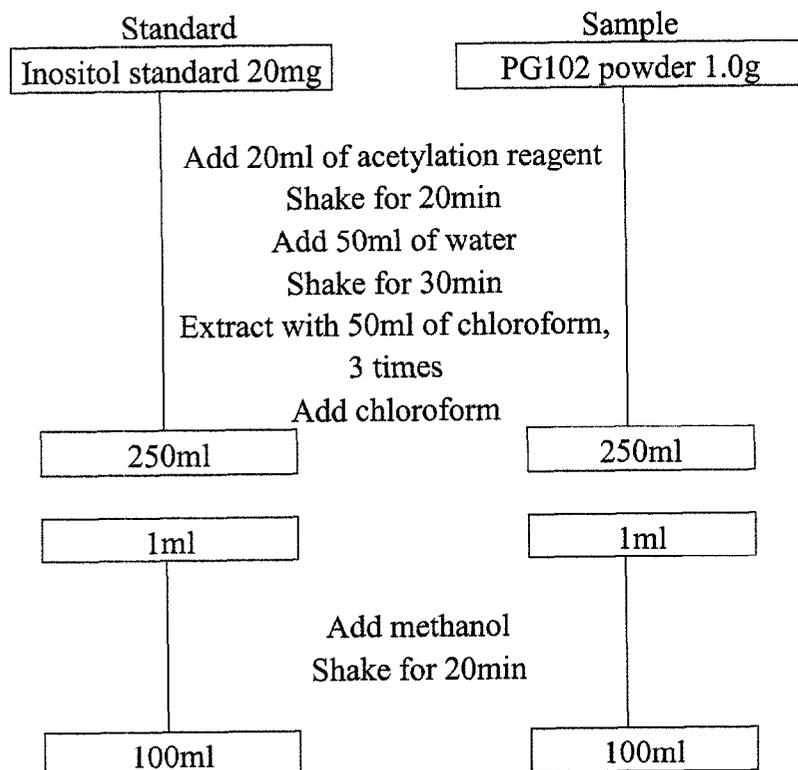
D. Quality Control Measures

Quality Control Measures

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Assay-1

A. Preparation of inositol standard and test sample



* Acetylation reagent: sulfuric acid 1ml + acetic anhydride 50ml

B. Experimental Condition

- HPLC Column: Capcell-pak C18 UG120
- Detector: 210nm
- Flow rate: 1.0ml/min
- Injection vol: 10 μ l
- Eluent: 55% methanol in water

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C. Experimental result

- Inositol Standard: 24mg
- PG102-021010: 1.016g
- PG102-021015: 1.015g
- Calculation formula (mg of Inositol/g of PG102)

$$\frac{\text{Standard Amount} \times \frac{\text{Sample Area}}{\text{Standard Area}}}{1} \times \frac{1}{\text{Sample Amount}}$$

◦ Result

1) PG102-021010

$$24\text{mg} \times \frac{3383.32080}{3330.52490} \times \frac{1}{1.016} = 24.26\text{mg}$$

2) PG102-021015

$$24\text{mg} \times \frac{3487.69336}{3330.52490} \times \frac{1}{1.015} = 24.76\text{mg}$$

D. Judgment of the result

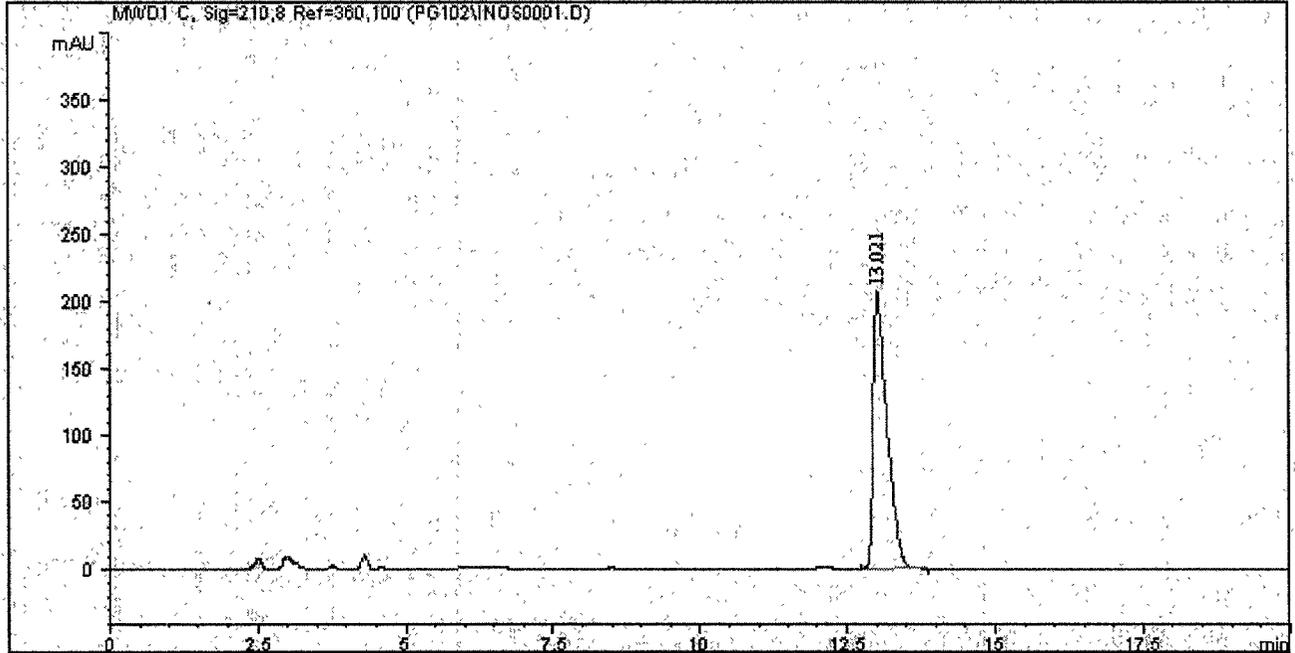
The test substance (PG102 extract powder) was judged positive (+) when the inositol amount of sample was more than 18mg/g of PG102 powder.

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=====
Injection Date : 11/9/02 10:39:18 AM      Seq. Line : 1
Sample Name    : std                      Location  : Vial 31
Acc. Operator  : OJH                      Int      : 1
                                           Inj Volume: 10 µl
Acc. Method    : C:\HPCHEM\1\METHODS\PG102\INOSITOL.M
Last changed   : 11/9/02 10:38:24 AM by OJH
Analysis Method : C:\HPCHEM\1\METHODS\PG102\STD.M
Last changed   : 12/17/02 1:26:45 PM by OJH
                (modified after loading)
=====

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SSS



=====
Height Percent Report
=====

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Sorted By      :      Retention Time
Multiplier     :      1.0000
Dilution       :      1.0000

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Signal 1: MWD1 C, Sig=210,8 Ref=360,100

Peak #	RetTime [min]	Sig	Type	Area [mAU*s]	Height [mAU]	Height %
1	13.021	1	BBA	3330.52490	206.64226	100.0000

Totals : 3330.52490 206.64226

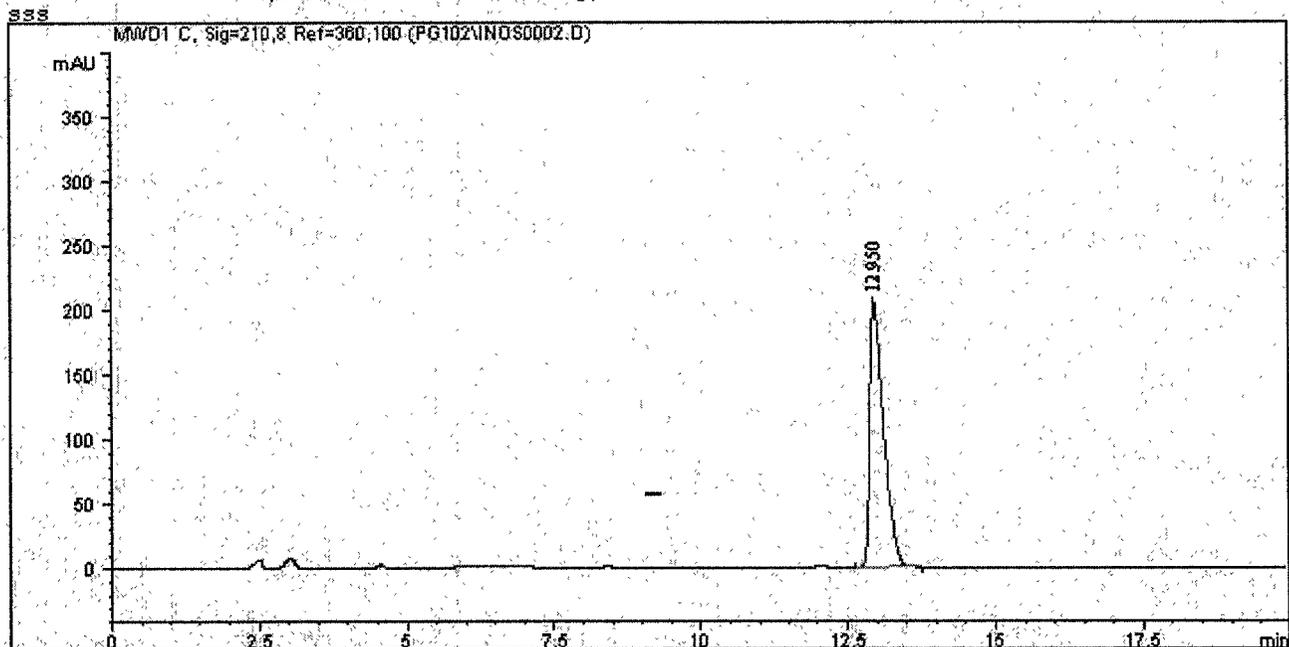
Results obtained with enhanced integrator!

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*** End of Report ***

Lot No. : PG102-021010

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=====
Injection Date : 11/9/02 11:00:12 AM      Seq. Line : 2
Sample Name    : sal                      Location  : Vial 32
Acc. Operator  : OJH                      Inj      : 1
                                           Inj Volume : 10 µl

Acc. Method    : C:\HPCHEM\1\METHODS\PG102\INOSITOL.M
Last changed   : 11/9/02 10:38:24 AM by OJH
Analysis Method : C:\HPCHEM\1\METHODS\PG102\STD.M
Last changed   : 12/17/02 1:26:45 PM by OJH
                (modified after loading)
=====
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Height Percent Report
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Sorted By : Retention Time
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: MWD1 C, Sig=210,8 Ref=360,100

Peak #	RetTime [min]	Sig	Type	Area [mAU*s]	Height [mAU]	Height %
1	12.950	1	PBA	3383.32080	209.05487	100.0000

Totals : 3383.32080 209.05487

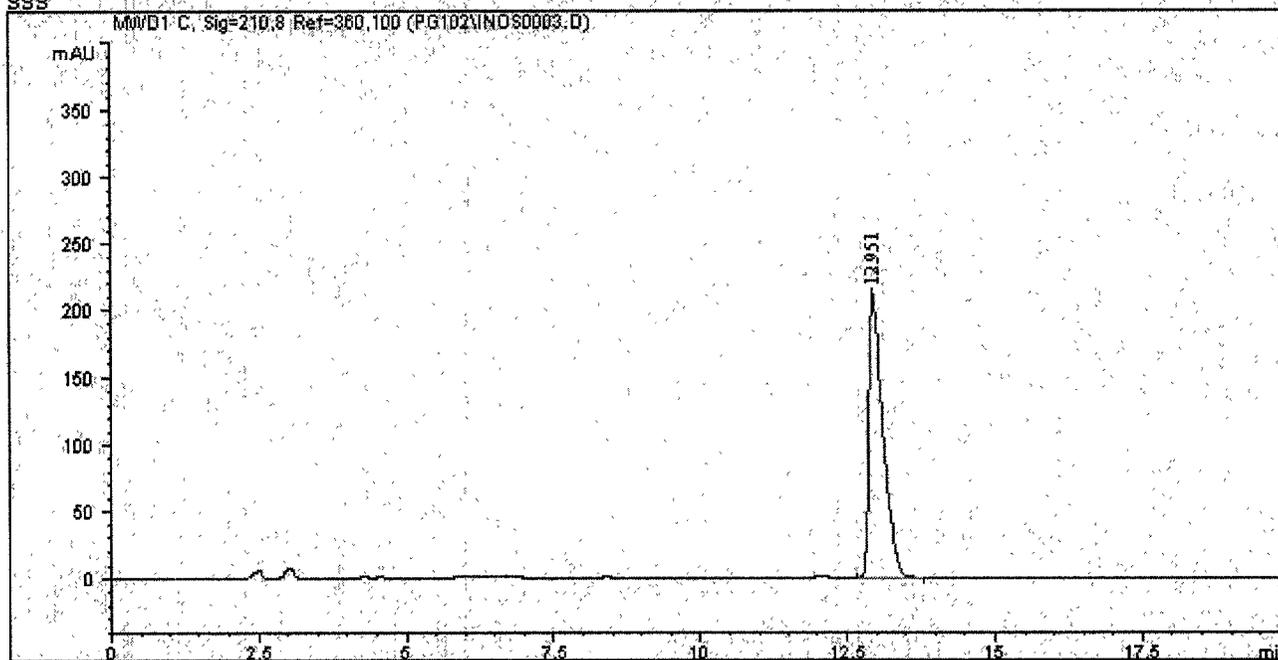
Results obtained with enhanced integrator!

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*** End of Report ***

Lot No. : PG102-021015

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Injection Date : 11/9/02 11:21:05 AM Seq. Line : 3
Sample Name : 8a2 Location : Vial 33
Acc. Operator : OJH Inj : 1
 Inj Volume : 10 µl
Acc. Method : C:\HPCHEM\1\METHODS\PG102\INOSITOL.M
Last changed : 11/9/02 10:38:24 AM by OJH
Analysis Method : C:\HPCHEM\1\METHODS\PG102\STD.M
Last changed : 12/17/02 1:26:45 PM by OJH
 (modified after loading)

SSS



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Height Percent Report
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Sorted By : Retention Time
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: MWD1 C, Sig=210,8 Ref=360,100

Peak #	RetTime [min]	Sig	Type	Area [mAU*s]	Height [mAU]	Height %
1	12.951	1	BBA	3487.69336	214.32785	100.0000

Totals : 3487.69336 214.32785

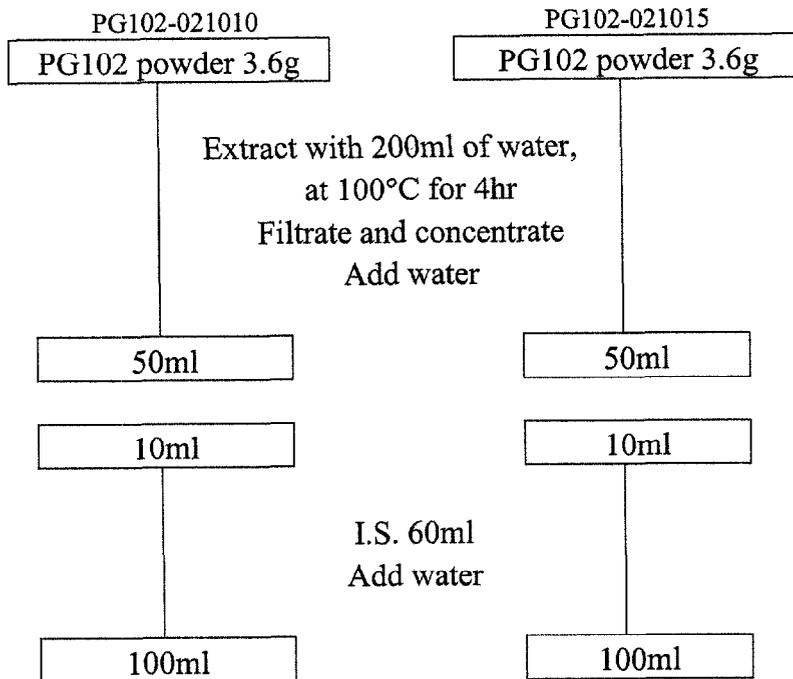
Results obtained with enhanced integrator!

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*** End of Report ***

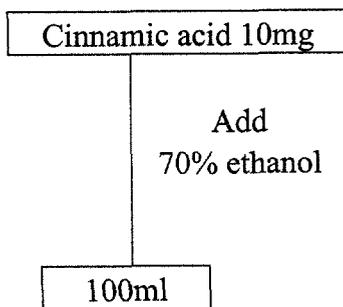
Assay-2

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A. Preparation of test sample



B. Preparation of internal standard



C. Experimental Condition

- HPLC Column: Capcell-pak C18 UG120
- Detector: 280nm
- Flow rate: 1.0ml/min
- Injection vol: 10 μ l
- Eluent

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Min	Acetonitile (%)	Water (in Phosphoric acid, %)
0	5	95
15	5	95
20	25	75
55	25	75
60	5	95
65	5	95

D. Experimental result

- Internal Standard Concentration: 60 μ g/ml
- PG102-021010: 3.6g
- PG102-021015: 3.6g
- Calculation formula

$$\frac{\text{Peak area of PG102}}{\text{Peak area of Cinnamic acid}}$$

- Result

1) PG102-021010

$$\frac{5672.36768}{5279.86133} = 1.0744$$

2) PG102-021015

$$\frac{5761.87842}{5436.61670} = 1.0598$$

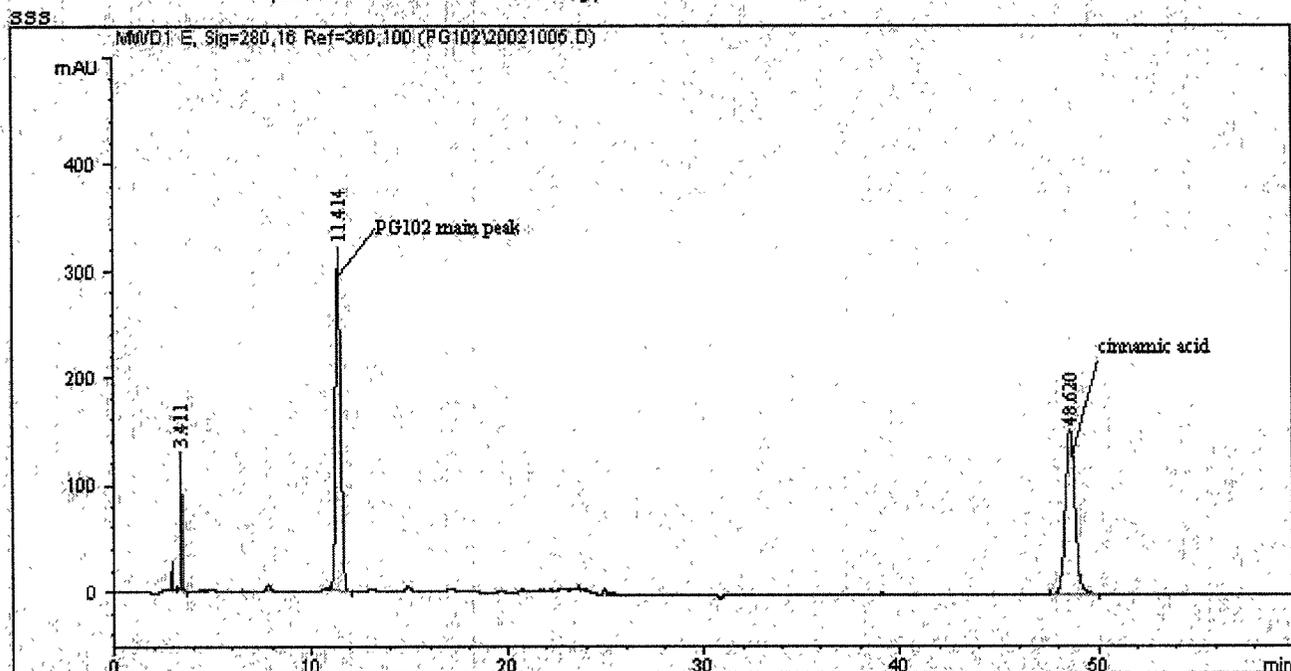
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E. Judgment of the result

The test substance (PG102 extract powder) was judged positive (+) when the rate of 11 min-peak area compared to that of Internal Standard was larger than 0.8.

Lot No. : PG102-021010

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Injection Date : 10/15/02 10:55:04 PM Seq. Line : 5
Sample Name : drv 1 Location : Vial 5
Acc. Operator : OJH Inj : 1
 Inj Volume : 10 µl
Acc. Method : C:\HPCHEM\1\METHODS\PG102\PREP.M
Last changed : 10/15/02 6:30:34 PM by OJH
Analysis Method : C:\HPCHEM\1\METHODS\PG102\STD.M
Last changed : 12/17/02 4:39:21 PM by OJH
 (modified after loading)



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Height Percent Report
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Sorted By : Retention Time
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: MWD1 E, Sig=280,16 Ref=360,100

Peak #	RetTime [min]	Sig	Type	Area [mAU*s]	Height [mAU]	Height %
1	3.411	1	BBA	370.02609	129.54701	21.4720
2	11.414	1	BBA	5672.36768	319.80963	53.0075
3	48.620	1	BBA	5279.86133	153.97252	25.5205

Totals : 1.13223e4 603.32916

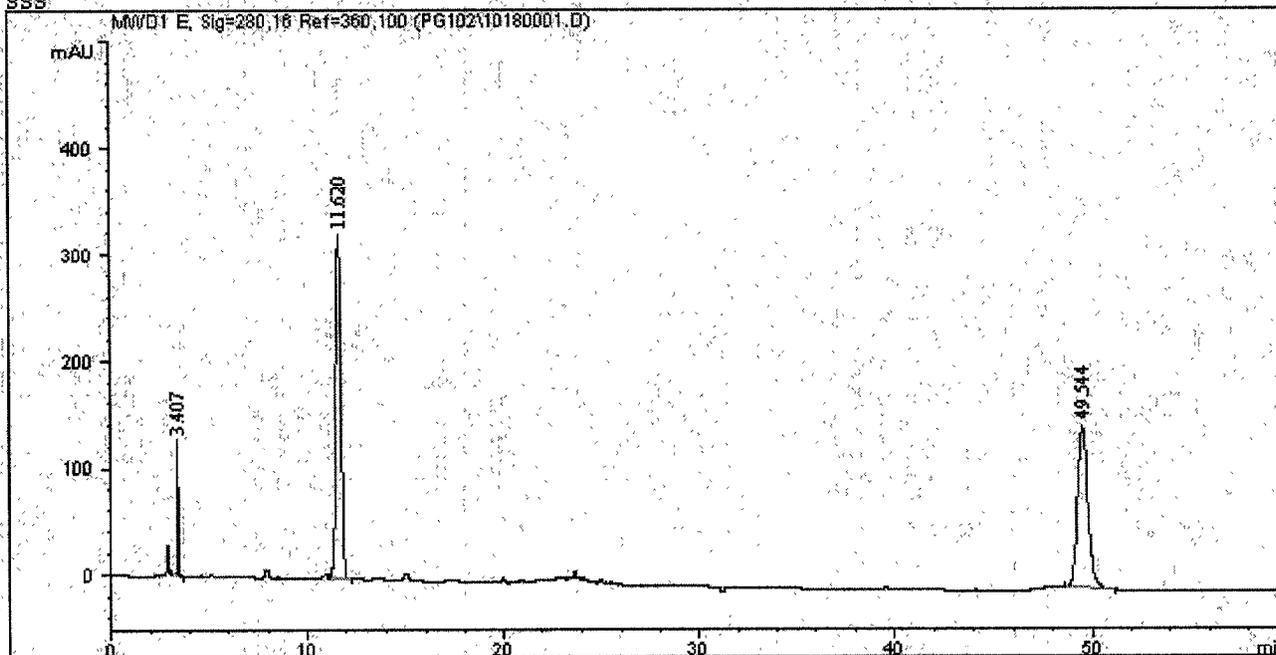
Results obtained with enhanced integrator!

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*** End of Report ***

Lot No. : PG102-021015

=====
Injection Date : 10/18/02 11:12:38 AM Seq. Line : 1
Sample Name : PG102-1 Location : Vial 5
Acc. Operator : OJH Inj : 1
 Inj Volume : 10 µl
Acc. Method : C:\HPCHEM\1\METHODS\PG102\PREP.M
Last changed : 10/17/02 10:57:51 AM by OJH
Analysis Method : C:\HPCHEM\1\METHODS\PG102\STD.M
Last changed : 12/17/02 4:39:21 PM by OJH
 (modified after loading)

SSS



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Height Percent Report
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Sorted By : Retention Time
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: MWD1 E, Sig=280,16 Ref=360,100

Peak #	RetTime [min]	Sig	Type	Area [mAU*s]	Height [mAU]	Height %
1	3.407	1	BBA	371.02777	128.03926	21.2152
2	11.620	1	BBA	5761.87842	321.80347	53.3205
3	49.544	1	BBA	5436.61670	153.68411	25.4643

Totals : 1.15695e4 603.52684

Results obtained with enhanced integrator!

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*** End of Report ***

E. Certificate of Analysis (PG102 powder batch)

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PanGenomics Co., Ltd.

#304 Biotechnology Incubating Center, Seoul National University,
Kwanak-gu, Seoul 151-742, KOREA
TEL: 82-2-878-2930 FAX: 82-2-873-8022

CERTIFICATE OF ANALYSIS

1. Product Name: PG102
2. Lot No.: PG102-021015
3. Manufacturing Date: 2002. 10. 15
4. Expiration Date: 2005. 10. 14

Analytical Test	Specification	Result
1. Description	Dark brown with characteristic odor	Passed
2. Assay		
1) Inositol	More than 18mg/g of powder	24.76mg/g
2) The ratio of PG102 main peak area compared to that of internal standard	More than 0.8	1.1



Sung-Seup Shin
Product Manager / Senior Researcher

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PanGenomics Co., Ltd.

#304 Biotechnology Incubating Center, Seoul National University,

Kwanak-gu, Seoul 151-742, KOREA

TEL: 82-2-878-2930 FAX: 82-2-873-8022

CERTIFICATE OF ANALYSIS

1. Product Name: PG102
2. Lot No.: PG102-021010
3. Manufacturing Date: 2002. 10. 10
4. Expiration Date: 2005. 10. 9

Analytical Test	Specification	Result
1. Description	Dark brown with characteristic odor	Passed
2. Assay		
1) Inositol	More than 18mg/g of powder	24.26mg/g
2) The ratio of PG102 main peak area compared to that of internal standard	More than 0.8	1.1



Sung-Seup Shin

Product Manager / Senior Researcher

F. Certificate of Good Manufacturing Practice
by Korea FDA



Korea Food & Drug Administration

#5, Ngokbun-~~ong~~, Eunpyung-Gu, Seoul, Korea, Tel: 82-2-388-1659, Fax: 82-2-353-2870

Certificate of Good Manufacturing Practice

Representative	Lee, Jung Chul	Name Of Manufacturer	Richwood Trading Company, Ltd.
Address(Plant)	906-1 Sangsin-Ri, Hangan-Myon, Hwasung-Si, Kyonggi-Do, Korea		
Registered Production Manager	Hong, Mi Joo	Registered Quality Control Manager	Lee, Myung Sook
Approved Dosage Forms			Approval Date
INTERNAL SOLID FORM : Tablet, Capsule(Hard)			Jan. 11, 1993
EXTERNAL SOLUTION : External Solution			Jan. 11, 1993
OINTMENT : Ointment			Jan. 11, 1993

It is hereby certified that the above manufacturing plant in which the products are produced is subject to inspections at suitable intervals and the manufacturer conforms to GMP(Good Manufacturing Practice) as recommended by WHO.

2001 7. 3 0

Director General
Pharmaceutical Safety Bureau
Korea Food and Drug Administration

G. Toxicity Studies

Toxicity Studies

Repeated oral toxicity test of PG102

Ten female balb/c mice were randomly assigned to two experimental groups. They were administered once a day by gavage at dose levels of 0 and 150mg/kg body weight for 28 days. Signs of toxicity, changes in body weight, hematological analysis, analysis in serum biological parameters, and histological analysis were checked for 28 days.

- (1) Body weight (Figure 1)
No abnormal body weight changes were observed in any group during the test period.
- (2) Clinical signs and mortality (Table 1,2)
No mortality and no abnormalities were found in any group during the test period.
- (3) Hematological analysis (Table 3)
There were no abnormalities were found in the numbers of WBC, lymphocyte, monocyte, neutrophil, eosinophil, basophil, RBC, hemoglobin, and platelet.
- (4) Biological parameters in serum (Table 4)
There were no abnormalities were found in biological parameters including AST, ALT, LDH, bilirubin, creatinine, glucose, cholesterol, minerals, albumin, BUN, lipase, amylase, and so on.
- (5) Histological analysis in organs (Table 5)
There were no abnormalities were found in kidney, spleen, thymus and liver of tested animals.

Table 2. Incidence of clinical signs of balb/c mice administered with PG102 orally for 4 weeks. They were administered once a day by gavage at dose levels of 0 (Control group) and 150mg/kg body weight (PG102 group) for 28 days.

Signs observed	Control	PG102
Appears normal	10/10 *	10/10

* : Number of animals with the clinical sign / Number of animals examined

Table 3. Hematological parameters of balb/c mice administered with PG102 orally for 4 weeks. They were administered once a day by gavage at dose levels of 0 (Control group) and 150mg/kg body weight (PG102 group) for 28 days. Values represent mean \pm S.D. (n=10).

Parameters	Control	PG102
WBC(10^3/ul)	5.7 \pm 1.8	4.3 \pm 1.1
Lymphocyte(%)	67.0 \pm 16.6	70.2 \pm 5.3
Monocyte(%)	6.2 \pm 1.1	7.0 \pm 1.7
Neutrophil(%)	20.3 \pm 10.4	19.1 \pm 5.0
Eosinophil(%)	2.6 \pm 1.3	3.0 \pm 1.7
Basophil(%)	0.6 \pm 0.3	0.7 \pm 0.3
RBC(10^6/ul)	8.6 \pm 1.5	9.3 \pm 1.2
Hemoglobin(g/dl)	11.3 \pm 2.2	11.9 \pm 1.4
Platelet(10^3/ul)	655.5 \pm 151.2	690.1 \pm 162.8

Note. WBC, white blood cells; RBC, red blood cells.

Table 4. Serum biological parameters of balb/c mice administered with PG102 orally for 4 weeks. They were administered once a day by gavage at dose levels of 0 (Control group) and 150mg/kg body weight (PG102 group) for 28 days. Values represent mean \pm S.D. (n=10).

Items	Control	PG102
Calcium (mg/dL)	10.6 \pm 0.5	10.6 \pm 0.7
Sodium (mEq/L)	150 \pm 4	149 \pm 8
Potassium (mEq/L)	5.1 \pm 1.2	5 \pm 0.3
Chloride (mEq/L)	112 \pm 9	106 \pm 2
Phosphorus (mg/dL)	8.3 \pm 1.1	5.4 \pm 0.6
Glucose (mg/dL)	152 \pm 1.8	140 \pm 0.4
Cholesterol (mg/dL)	270 \pm 5.7	188 \pm 3.1
ALT (IU/L)	57 \pm 9.3	37 \pm 7.9
AST (IU/L)	136 \pm 40.2	80 \pm 31.2
Total protein (g/dL)	5.8 \pm 0.6	5.2 \pm 0.4
Total Billiubin (mg/dL)	0.6 \pm 0	0.4 \pm 0
Albumin (g/dL)	3.2 \pm 0.2	3 \pm 0.1
Creatinine (mg/dL)	0.5 \pm 0	0.6 \pm 0
BUN (mg/dL)	18 \pm 1.4	13 \pm 0.7
Alkaline phosphatase (IU/L)	250 \pm 51.4	214 \pm 42.7
Amylase (IU/L)	1312 \pm 148.7	1252 \pm 201.6
Lipase (IU/L)	254 \pm 24.8	316 \pm 41.3
LDH (IU/L)	1642 \pm 276.4	1164 \pm 134.2
Ig E (mg/dL)	0.01 \pm 0	0.01 \pm 0
Ig G (mg/dL)	219 \pm 75.1	219 \pm 12.4

Note. BUN, blood urea nitrogen; CRE, creatinine; AST, aspartate-aminotransferase; ALT, alanine-aminotransferase.

Table 5. Histopathological findings in balb/c mice killed at the end of the administration period of 4-week oral repeated administration toxicity study of PG102. They were administered once a day by gavage at dose levels of 0 (Control group) and 150mg/kg body weight (PG102 group) for 28 days.

Organs observed	Number of abnormal animals	
	Control	PG102
Liver	0	0
Kidney	0	0
Spleen	0	0
Lung	0	0

H. Supplement Facts

Certificate No. 3682

Certificate of Analysis

DATE : November. 08. 2002

Name of Product PG102

Test Item(s) Appearance etc. 14 items

Name and Address of Applicant PanGenomics Co., Ltd Chang-Yuil Kang
#304 Biotechnology Incubating Center Seoul
National University, Kwanak-gu, seoul151-742,korea

Purpose for Test For Admission

Date of Application

October. 28. 2002

Analytical Result(s) :

Appearance.....	Good
Crude protein(%).....	2.4
Vitamin A(IU/100g).....	181.9436
Vitamin C(mg/100g).....	680.0
Calories(kcal).....	376.0
Iron(mg/100g).....	10.4
Dietary fiber(Insoluble)(%).....	Not detect
Total sugars(%).....	13.7
Cholesterol(%).....	Not detect
Saturated fats(%).....	Not detect
Calcium(mg/100g).....	405.6
Sodium(mg/100g).....	610.1
Total fat(%).....	0.0
Carbohydrate(%).....	91.6

We hereby certify that the above are correct

KHIDI Korea Health Industry Development Institute

President : CHANG, IM WON

57-1, NOR YANGJIN-DONG, DONGJAK-KU, SEOUL, KOREA

This certificate is only for the product which is sampled by the applicant and can not be used for commercial advertisement without pre-approval

Certificate No. 3683

Certificate of Analysis

DATE : November. 12. 2002

Name of Product PG102

Test Item(s) Appearance etc. 11 items

Name and Address of Applicant PanGenomics Co., Ltd Chang-Yuil Kang
#304 Biotechnology Incubating Center Seoul
National University, Kwanak-gu, seoul 151-742, korea

Purpose for Test For Admission Date of Application October. 28. 2002

Analytical Result(s) :

Appearance.....Good
Acidity(%).....7.4
Coliforms.....Negative
Yeast and mold count.....0/g
Total plate count.....0/g
E. Coli 0157:H7.....Negative
Dieldrin(mg/kg).....Not detect
DDT(mg/kg).....Not detect
BHC(mg/kg).....Not detect
Endrin(mg/kg).....Not detect
Aldrin(mg/kg).....Not detect

We hereby certify that the above are correct

KHIDI Korea Health Industry Development Institute

President : CHANG, IM WON

57-1, NORYANGJIN-DONG, DONGJAK-KU, SEOUL, KOREA

This certificate is only for the product which is sampled by the applicant and can not be used

for a special advertisement without pre approval

발간등록번호

11-1390187-000028-13

식품성분표

FOOD COMPOSITION TABLE
제 6 개정판 (2001년)
Sixth Revision

제 2 편



 농촌진흥청
농촌생활연구소

National Rural Living Science Institute, R.D.A.

I. History of *A. arguta*

by Dr. Bernadine Strik, Professor of Horticulture,
(Extension Berry Crops, Oregon State University)

EXTENSION
HORTICULTURE

Bernadine C. Strik
Professor
Extension Berry Crops

Berry Crops Research
Leader, NWREC



OREGON
STATE
UNIVERSITY

4017 Ag. and
Life Sciences Bldg.

Corvallis, Oregon
97331-7304

Telephone
541-737-5434

FAX
541-737-3479

e-mail
strikb@science.oregonstate.edu

November 27, 2002

Dr. Michael C. Son
Director of Regulatory Affairs
PanGenomics, Inc.
3699 Wilshire Blvd. Suite 700-19
Los Angeles, CA 90010

Dear Dr. Son:

As per your request, I am writing to provide you with my perspective on the present situation of the hardy kiwifruit (*Actinidia arguta*) industry in Oregon. I am a Professor of Horticulture at Oregon State University and Berry Crop Research Leader at the North Willamette Research and Extension Center (NWREC) where I focus on production/physiology research. I am also the state Berry Crops Extension Specialist. I started working with kiwifruit in 1990 when I established a species and variety trial at the NWREC, before there was significant commercial acreage of hardy kiwifruit in this state (< 5 acres).

We found that the best suited species and cultivar of those we tested was *Actinidia arguta* 'Ananasnaya'. This has become the predominant cultivar planted. In the last 12 years, we have conducted several workshops, written a commercial extension publication on its culture (I sent you this), and I have had two graduate students complete studies on the physiology of this crop.

In 1997, I surveyed the kiwifruit industry in Oregon and Washington. At that time there were about 65 acres planted to 'Ananasnaya' with 31 growers. Of this acreage, most was immature – plantings are not considered mature until year eight. In 1999, the acreage was estimated at 85 acres with 25% not yet producing a crop (too young). We now have approximately 100 acres in Oregon. I estimate that there are 15 acres in Washington, 15 acres in Pennsylvania, < 15 acres in other areas of the USA, total. For an international perspective, there are <25 acres in Canada, about 50 acres in New Zealand, and < 15 acres in each of Chile, Italy and The Netherlands.

Oregon has an ideal climate for the production of high quality fruit with our temperate summers (warm days, cool nights). We have had workshops to help growers development suitable production systems and have had success helping growers achieve excellent yields (5 to 13 tons/acre, depending on planting age and other factors).

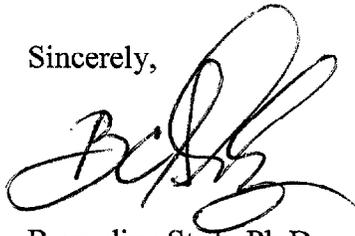
Fruit quality has been excellent. However, the marketing of this new crop has proved to be a challenge. Mark Hurst at Hurst's Berry Farm in Sheridan Oregon was the first shipper/marketer and deserves the credit for getting the crop on the map. The fruit are once-over harvested in September and can be stored fresh for slightly less than two months under ideal conditions. Th

Strik, page 2

there is a narrow marketing window for fresh fruit. Also, many people are not yet familiar with this new crop. Much of our fresh fruit is shipped to Japan where they apparently appreciate the health benefits of hardy kiwifruit. We have a processing industry, but it is in its infancy. Cutting Moon Ranch in Wilsonville has developed some value-added products. In my opinion, the success of the hardy kiwifruit industry in Oregon shows great promise; however, it is dependent on the development of thriving fresh markets and a processing industry. With 100 acres planted, we can expect upwards of 1 to 2 million pounds of fruit produced annually in Oregon alone. I don't expect acreage to increase until these markets are developed. Once successful, I would expect growers to be willing to plant more acreage.

Please do not hesitate to contact me if you have further questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Bernadine Strik', with a large, stylized flourish at the end.

Bernadine Strik, Ph.D.

Professor

Berry Crops Research Leader, NWREC

**This document contains copyrighted material. The documents may be
viewed to:**

**Dockets Management Branch
Food and Drug Administration
5630 Fishers Lane, Room 1061
Rockville, MD 20852**

J. Food Ingredient Classification of *A. arguta*
by Korean Food and Drug Administration

[제41호서식]

공증인가 반도합동법률사무소

Registered No. 2002-1385

NOTARIAL CERTIFICATE

BANDO LAW AND NOTARY OFFICE

1808, BANGBAE-DONG, SEOCHO-KU,
SEOUL, KOREA

Korea Food and Drug Administration

122-704, No. 5, NokBun-Dong, EunPyung-Ku, Seoul. Tel: 02-380-1667 FAX: 02-382-4892

Food Standardization Div., Manager: Ki-Sung Kwon, Senior Researcher: Jin-Whan Hong, Corresponding Staff: Hyung-Wook Jung

No. of Document: Shik-Gyu 65421-1941

Date of execution: October 30, 2002 (1 year)

Open to public: Yes

Pass through:



Recipient: Bongcheol Kim, PanGenomics, Inc.

307, Biotechnology Incubation Center, San 56-1, Shilim-Dong, KwanAk-Gu, Seoul, Korea.

Re: Reply on the Request about food ingredient

1. This is related to the Request 2491 (October 23, 2002)
2. I inform you that hardy kiwifruit (*Actinidia arguta*) is listed as (5) Fruits among 28) Main Ingredients in Chapter 3 'The Criteria and Standard of General Food' of the current version of the Food Code.

The Commissioner of

Korea Food and Drug Administration

TRANSLATED BY:

BONGCHEOL KIM



v

《국민에게 몇몇하게, 자녀에게 당당하게》
신 품 의 약 품 안 전 청

정보통신망

122-704	서울시 은평구 녹번동 5번지	전화: 02-380-1667	전송: 02-382-4892
식품규격과	과장: 권기성	연구관: 홍진환	담당: 정형욱

문서번호 식규65421-1941

시행일자 2002.10.30. (1년)

공개여부 공개

경유

발음 김봉철 (주)팬제노믹스

참조 서울시 관악구 신림동 산 56-1 서울대학교 유전공학 창업보육센터 307

제 목 식품원료에 대한 검토 회신

1. 민원서류 2491 (2002. 10. 23.)호와 관련입니다.
2. 위 대호로 귀하께서 질의하신 내용을 검토한 결과, 다래 (*Actinidia arguta*)는 현행 식품공전 제3. 식품일반에 대한 공통기준 및 규격 1. 용어의 풀이 28) 식품원재료 분류 ⑤ 과실류에 포함되어 있음을 알려드리니 업무에 참고하시기 바랍니다. 끝.

식 품 의 약 품 안 전 청



[제45호서식]

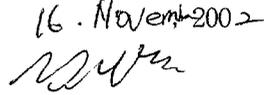
공증인가 반도합동법률사무소

위 번역문은 원문과 상위없음을
서약합니다.

200 2 . 11 . 16 .

서약인 김 봉철  ①

I swear that the attached translation
is true to the original.

Signature 16. November 2002


등부 2002년 제 1385 호

인 증 

위 김 봉철  은

본직의 면전에서 위 번역문이
원문과 상위없음을 확인하고
서명날인하였다.

2002. 11. 16. 이 사무소에서

위 인증한다

Registered No. 2002-1385

NOTARIAL CERTIFICATE

BONGCHEOL KIM

personally appeared before me,
confirmed that the attached
translation was true to the original
and subscribed his(her) name.

This is hereby attested
on this 16 day of November
2002 at this office.

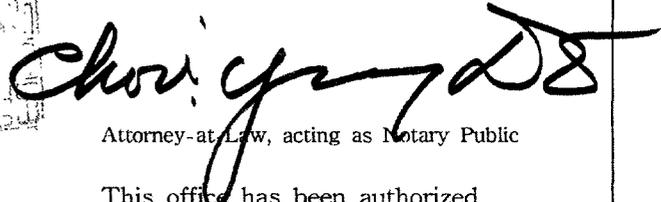
공증인가 반도합동법률사무소

서울특별시 서초구 방배동 1808

BANDO LAW AND NOTARY OFFICE

1808, BANGBAE-DONG, SEOCHO-KU, SEOUL, KOREA

최영득
공증담당 변호사


Attorney-at-Law, acting as Notary Public

This office has been authorized
by the Minister of Justice, the
Republic of Korea, to act as
Notary Public since February 22,
1971, under Law No. 2254.



K. Market Information I

By Cutting Moon Ranch (Oregon)



34515 SW Ladd Hill Rd.

Wilsonville, OR 97070

Ph: 503-925-9056

Fax: 625-0562

Email: cuttinmoon@aol.com

November 20, 2002

Mr. Michael Son
Director of Regulatory Affairs
PanGenomics, Inc.
3699 Wilshire Blvd Suite 700-19
Los Angeles, CA 90010

Dear Mr. Michael Son,

Thank you for the correspondence clearly defining your interest in our company; WEE-KI BERRIES. I'm confident your review of the enclosed promotional materials will 1) heighten your interest in the versatility of the miniature fuzzless kiwi and 2) confirm our integrity as a major supplier of fresh packaged and/or processable bulk product. We have an ongoing program focusing on *consumer* awareness of our fresh wee-ki berries as an exciting addition to daily diet routines. Additional R & D and promotional efforts toward a mutual goal of *product* awareness are certainly welcome.

As we spoke on the phone, to our knowledge, commercialization of this versatile fruit is relatively new (5-10 yrs).

To summarize WEE-KI BERRIES----

- 1994 Eric & Marla Jochim, owners, began research of the miniature fuzzless kiwi (baby kiwi)
- 1995 Planting of 15 acres of new plants
- 1999 First Commercial harvest
- 1999-2000 Packaging, Sales and Distribution handled thru a Sales Brokerage with minimal and unsatisfactory results
- 2001 Cooling and Packing sheds with an Office were constructed on the farm site for greater ease of Marketing, Sales and Distribution by WEE-KI personnel
- 2002 >Harvesting Season Early Sept -Late Oct
 - >Yield 15 Acres—125M -135M pounds /Projected conservative 10% yearly increase thru 2008
 - >Annual Purchasing Access to an additional 150M pounds from area growers, whose tonnage increase will partially be predicated on our availability to market the increase.
 - >Distribution
 - Fresh-- 80% Export (Japan/Hong Kong) 9-10-11 Brix Level
 - 20% Domestic 12-13-14 Brix Level
 - Our goal is balanced distribution of Fresh Sales.

<i>Fresh Packs</i>	4/2.5 # Tray	Export	12/12 Pint Tray	Domestic
	8/1.25# Tray	Export	12/ 6 OZ Tray	Domestic
2003 Addition	??/125 gr Tray	Export		



>Distribution Con't

Processed-- Enclosed brochure identifies processed product, however, we have been unable to successfully develop a recordable distribution program of this product line.

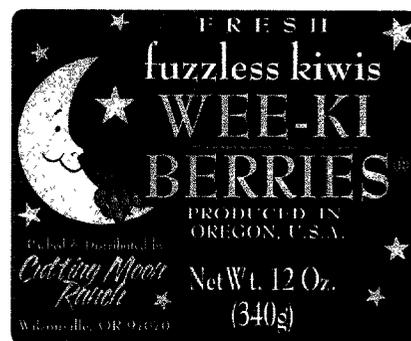
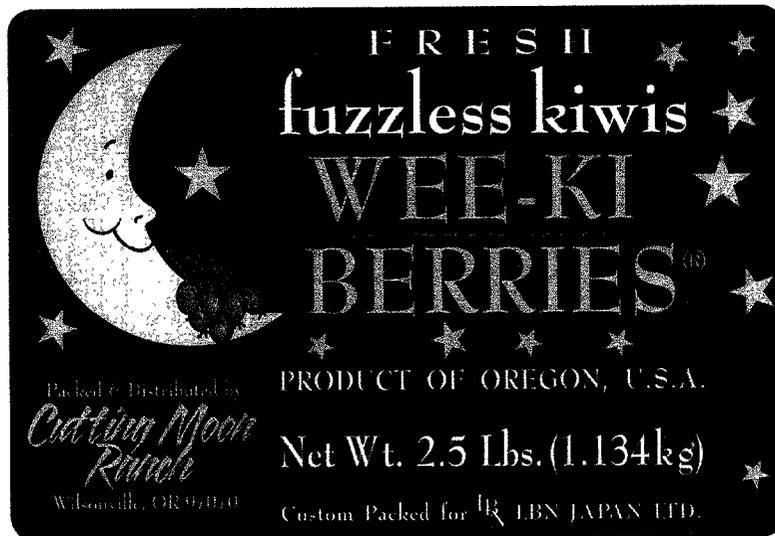
Again, thank you for your interest. We look forward to your feedback.

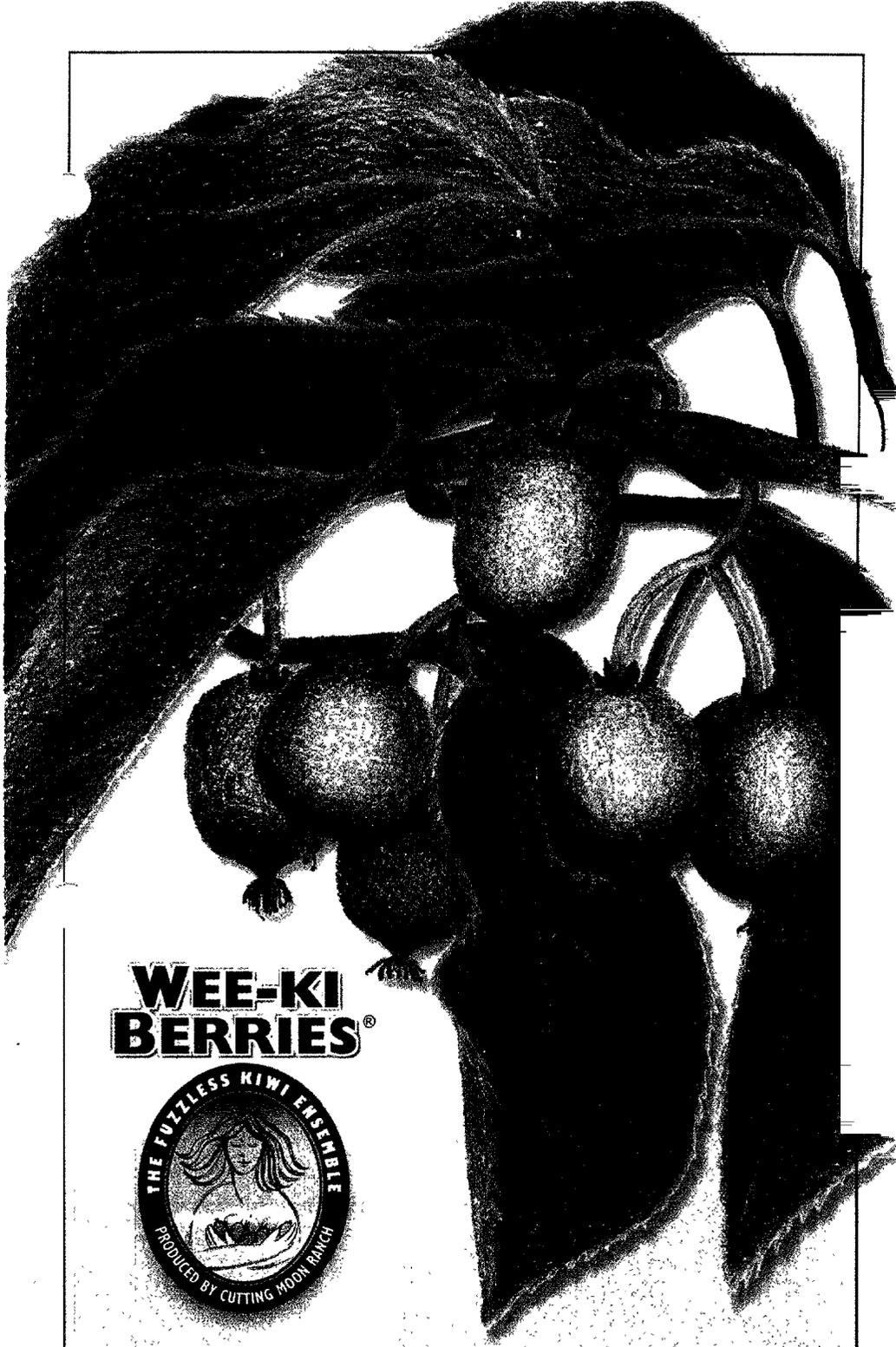
Sincerely,



Doris Keith
Marketing/Sales Manager
WEE-KI BERRIES

Page 2
Mr. Michael Son
Director of Regulatory Affairs
November 20, 2002





**WEE-KI
BERRIES®**



PRODUCING LITTLE MIRACLES



Remarkable things are happening here at **Cutting Moon Ranch** in Wilsonville, Oregon. We're growing an almost-secret fruit... **the unique green**

fuzzless kiwi. Distinct from its common cousin, the brown, fuzzy Hayward, the **fuzzless kiwi** has an edible smooth skin and is **highly aromatic**, with a **sweet, zesty flavor**. It's immediately recognizable by its petite size, comparable to that of an olive. We've fondly nicknamed our fuzzless kiwi the **Wee-ki Berry** because of its tiny size.

SWEET OR TANGY...

Which is more your taste? Either way, it's easy to select a fuzzless kiwi so it's just as you like it. Simply pick the fruit by its color. Deep-green fuzzless kiwi are on the very-ripe end of the **flavor spectrum** and have an extremely sweet, minty flavor. Fuzzless kiwi that are medium-green in color and harder to the touch give your mouth a burst of sweet-and-tangy flavor, without a trace of mint. Lighter-hued fuzzless kiwi are quite tangy, tasting similar to a green apple. Since the skin of the fuzzless kiwi doesn't need to be peeled away (like the fuzzy variety), you can pop the tasty little green fruit right in your mouth.

Kiwifruit is one of the best natural sources of **vitamin C**, containing twice as much as an orange. It also has more **potassium** than a banana and is a good source of **dietary fiber**. The tiny fruit even contains doses of calcium, magnesium, vitamin E, and niacin, as well as other nutrients.



NATURAL NURTURING

True to our homegrown philosophy at **Cutting Moon Ranch**, we care for and harvest our kiwifruit using only the healthiest, most natural techniques. Every single **Wee-ki berry** is carefully **hand-picked** after it has ripened on the vine (our fruit is never gas ripened). This guarantees that only **fresh, safe berries**—still bursting with flavor and nutrients—go into our delicious kiwi-based foods.

Because we have **the largest fuzzless-kiwi vineyard** in the United States, we are able to offer a variety of kiwi-based products for every taste and use. One thing remains constant, however: The unmistakable zesty flavor of our special **Wee-ki Berry** is packed into every bite of our **chutneys, spreads, and salsas**.

◆ **Savory Chutney**

Fuzzless kiwi, sugar, onions, currants, water, vinegar, pine nuts, spice, salt, ginger, garlic, basil, mustard, hot peppers, and olive oil.

◆ **Basil Chutney**

Fuzzless kiwi, sugar, onions, golden raisins, water, vinegar, walnuts, sweet peppers, salt, ginger, garlic, basil, mustard, spice, and hot peppers.

**WEE-KI
CHUTNEYS**



WEE-KI SPREADS

◆ **Champagne Spread**

Fuzzless kiwi, sugar, champagne, citric acid.

◆ **Pineapple Spread**

Fuzzless kiwi, sugar, pineapple, lime juice, citric acid.

◆ **Orange Spread**

Fuzzless kiwi, sugar, oranges, citric acid.



WEE-KI SALSA

◆ **Salsa**

Fuzzless kiwi, onions, jalapeno peppers, basil leaves, lime juice, salt, sugar, bell peppers.



WEE-KI CHUTNEYS

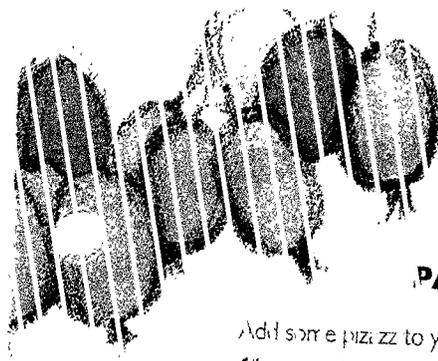
Chutney is **relish with a spark**, a complex blend of **sweet and tart** flavors that complements food and stimulates the taste buds and appetite. Originally from India, chutney traditionally contains fruits and/or vegetables, vinegar, sugar or honey, and spices. It's often served with curries, meats, and breads.

Cutting Moon Ranch offers two unique kiwi chutneys. Our **Wee-ki Basil Chutney** is a sweet, full-bodied relish. In comparison, our aromatic and pungent **Wee-ki Savory Chutney** has a spice bite.



ZESTY ALTERNATIVES FOR EVERYDAY LIVING

Either chutney makes an **excellent topping** for grilled, roasted, or smoked meats, poultry, or fish. **Hot or cold**, it adds instant life to sandwiches and leftovers, such as meatloaf. Try chutney over veggies in a pita pocket or even atop an omelet or cottage cheese! Mix it with oil and vinegar to create a new dressing for spinach salad. And don't overlook chutney as a wonderful ingredient to add in stews.

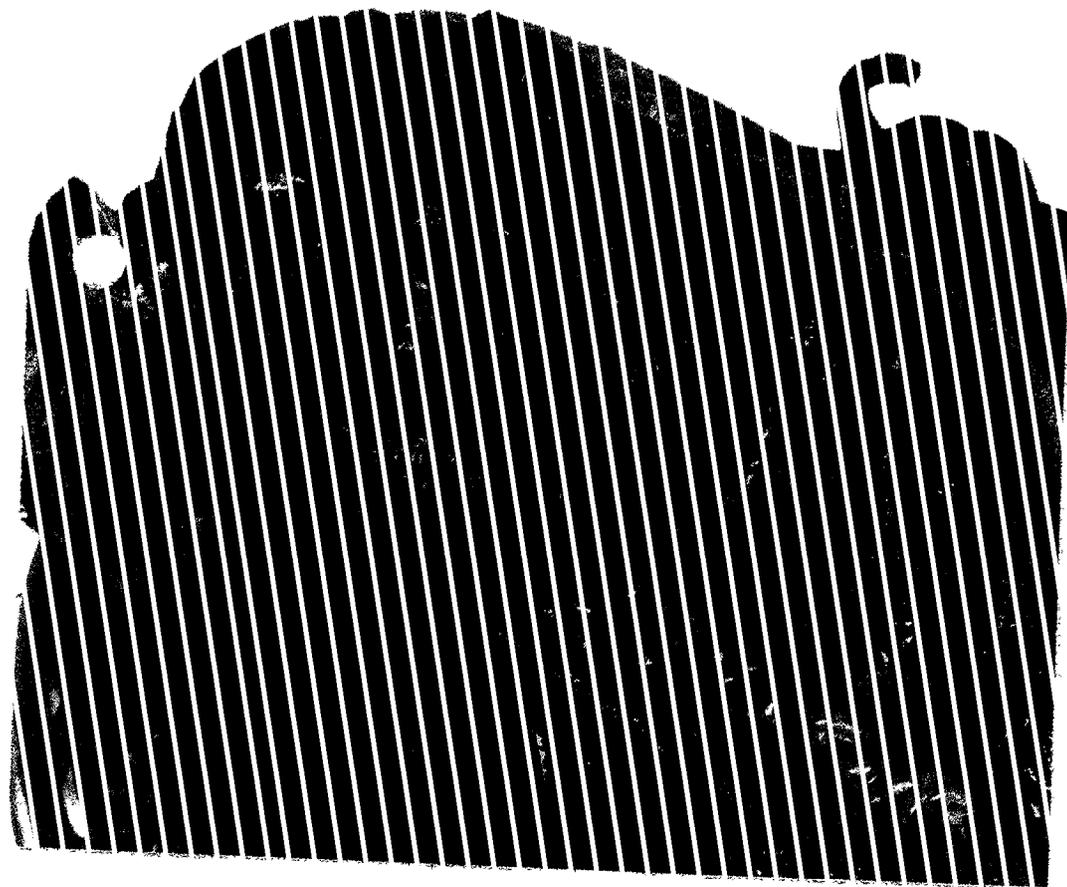


PARTY PLEASERS

Add some pizzazz to your favorite party recipes by substituting **Vealiter's Chutneys** for standard relishes and condiments. Dress up your 4th of July sausage; try it on a slice of turkey; make a glaze for your Easter ham; or set it into a Christmas jelly roll.

No matter how you serve it, our mouth-watering chutneys will be the hit of the party.

TO ORDER CALL 1-803-923-9055





WEE-KI SPREADS

Our distinctive kiwi spreads would be called marmalades if they had the fruit and still in them. But our line of smooth-textured spreads offers just as much fruity flavor and more versatility.

We make three delicious blends: **Wee-ki Champagne**, **Wee-ki Pineapple**, and **Wee-ki Orange**. They're an easy choice when you want something packed with flavor and nutrients to spread on a bagel, piece of bread, or cracker. Try one paired up with cream cheese, or make a sandwich using one with peanut butter. Of course, some people prefer to eat our spreads right out of the jar!



TO ORDER CALL 1-503-925-9056

All photos by Grace Weston

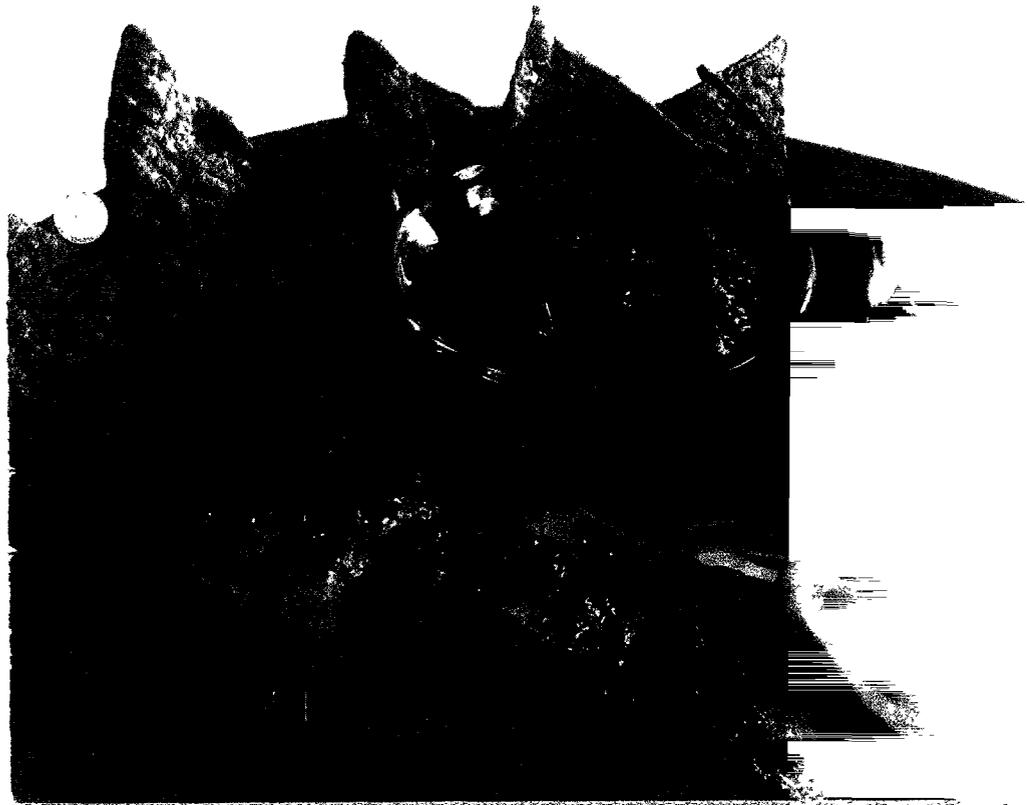
WEE-KI SALSA



To Spanish-speakers, salsa is simply "sauce." Yet the condiment is emblematic to the spicy taste that permeates Latin cooking. Although people often think of "chili fire" in association with the fruit, herb, or vegetable mixture, there are **sweet-and-sour** varieties, too.

Our **Wee-ki Salsa**, for example, offers mild stimulation to the tastebuds. Because it's multicolored, it makes a festive accompaniment to a piece of grilled meat, fish, or chicken. Of course it can easily be a substitute for classic salsa combinations. Watch out—it's irresistible with tortilla chips!

**We wish you many enjoyable moments
savoring our Wee-ki Berry ensemble!**





WEE-KI BERRIES

They're "wee" little kiwis

Wikky? Wacky? No, It's a Wee-Ki Berry

Get your taste buds ready for the sweet tart tingle of a Wee-Ki Berry. These grape size relatives of the Kiwi don't have to shave; they're fuzzless with an edible greenish peel on the outside instead of hairy brown skin. You just pop them in your mouth and savor the exotic taste, a cross some say, between strawberry and pineapple, with none of the peeling and paring of their full-size cousins.

Wee-Ki Berries (*Actinidia arguta*), beautiful, vigorous, fast-growing plants were formerly known as Chinese Gooseberries. Although kiwifruit is associated with New Zealand, it actually originated in the Chang Kiang Valley of China. The Chinese used it as a medicinal food, due to its high nutritional value. It was first imported to the west in the early 1900's, as an ornamental vine and gained popularity in the 1960's after having a cosmetic name change to that of the flightless New Zealand bird. The 1990's heralded the age of a new type of kiwi fruit that appealed to consumers seeking variety and great taste with none of the inconvenience of peeling - the irresistible Wee-Ki Berry.

Wee-Ki Berries are about the size of grapes, with a more opaque green skin. They grow on vines and hang in long, heavy clusters. Like fuzzy kiwis, Wee-kis have soft green flesh with small, black crunchy seeds. They taste sweeter than fuzzy kiwis and don't require peeling. On the nutrition front Wee-Ki berries can win a gold, silver and bronze medal. One serving, has almost twice the vitamin C of an orange, 1 ½ times the potassium of an average banana and almost as much fiber as a cup of bran flakes. The skin and the crunchy seeds may contain most of this nutrition, so Wee-Ki fruits make not only a convenient but also a nutritious snack.

There are a variety of ways to serve Wee-Ki berries, from plain to gourmet. They pair well with tropical fruits like mango, coconut and pineapple, but also lend themselves to cold salads, grilled fish or chicken and make a luscious fresh baked tart. Also, Wee-Ki berries and their fuzzy cousin break down the enzymes in meat, and act as a natural tenderizer, so consider a kiwi marinade at your next BBQ.

Wee-Ki Berries are available from mid September through the end of October. Choose Wee-Ki fruit that have a smooth green to reddish brown skin color and are firm to the touch. They may be eaten at different stages of ripeness, with the dark green berries being the ripest, and each stage having its own distinctive taste. Wee-Ki's are low in fat, have no cholesterol, and are high in fiber and vitamins, making them one of nature's superfoods. Look for them in the produce section of your favorite market today.



WEE-KI BERRIES

They're "wee" little kiwis.

Cutting Moon Ranch

Where do Wee-Ki Berries come from? No, they don't come from Ma and Pa Kiwi. These "wee kiwis" are grown at Cutting Moon Ranch in Wilsonville, Oregon just southwest of Portland. Owners Eric and Marla Jochim have the largest fuzzless-kiwi vineyard in the entire United States. Nestled in the lush green hills of the Oregon Coast Range, the Wee-Ki Berry vines stretch across the fields for acres. Each year the vines grow bigger and more productive, since like grapes it takes them seven years to mature before producing the highest quality berry.

The Jochims stay true to a homegrown philosophy and care for their vines using only the healthiest, most natural techniques. Each September, the Wee-Ki berries are carefully picked by hand and loaded into baskets. Cutting Moon Ranch never gas ripens their fruit, preferring to allow nature to do the work. This guarantees that only fresh, safe berries, bursting with flavor and nutrients, go to you the consumer. You can trust that if you taste Cutting Moon Ranch Wee-Ki Berries you are eating the finest fruit produced under the most natural conditions.

Cutting Moon Ranch sends fresh Wee-Ki Berries across the United States and overseas. In addition to fresh picked Wee-Ki's they produce a variety of processed products including sumptuous jams, sweet and spicy chutneys and piquant salsas. If you are interested in learning more about Cutting Moon Ranch and their Wee-Ki Berries, you may visit their website, www.weekiberry.com. You may order fresh Wee-Ki Berries from late September until the end of November and chutneys, jams and salsa year round.

Wee-Ki Berry Briefs: Handling – Storage -Nutrition

- **When buying fresh Wee-Ki berries** select fruits that are unblemished and firm but not rock hard. The flesh should yield to slight pressure like that of a ripe peach. Avoid berries that are shriveled or show mold.
- **Dark green Wee-Kis are the ripest** with a sweet minty flavor, but some folks prefer the pleasantly tart taste of a light green wee-ki.
- **Store Wee-Ki berries in the refrigerator** they will keep for up to one week when refrigerated in their plastic container.
- **Hard fruit may be ripened** by leaving it at room temperature for a day or two. Putting fruit in a paper bag with an apple, pear or banana may speed up the process.
- **Wee-Ki berries are completely edible.** Just pop into your mouth and enjoy!
- **Baking with Wee-Kis** does not change their color. They may be sliced or quartered and used in your favorite muffin recipe.
- **Direct cooking** will cause some color change, so toss in the fruit at the very end of recipe preparation.
- **1 cup of Wee-Ki berries** contains about 20 berries
- **Wee-ki berries contain an enzyme that prevents gelatins from setting.** Do not use fresh Wee-Kis in a gelatin mixture.
- **One serving of Wee-Ki berries contains twice the vitamin C of an orange, and more potassium than a banana.** It is high in fiber, low in calories and packed with vitamins and minerals.

Nutrition Information – one serving (6 fruits) of Wee-Ki berries contains:

Calories	92.8 kcal	Carbohydrates	22.6 grams
Vitamin A	27.4 IU	Fat	0 grams
Vitamin C	149 mg	Sodium	7.6 mg
Cholesterol	0 mg	Protein	1.5 grams
Potassium	504 mg	Iron	1 mg
Vitamin E	1.7 mg	Fiber	5.6 grams

Wee-Ki Berries - One of Nature's SuperFoods

Wee-Ki berries, the newest member of the kiwifruit family, may be small but these succulent mouthfuls pack a nutritional wallop. In 1997, Dr. Paul Lachance of Rutgers University conducted a study of nutrient density in fruits. (*Journal of the American College of Nutrition*, October 1997) In this study he evaluated the nutritional value of fruits to determine ounce for ounce which fruits provide the most nutrition. He tested the 27 most commonly consumed fruits on the basis of the amount of daily value they provide per 100 grams of fruit. This study found kiwifruit to be the most nutrient dense of all fruits. Just take a look at some of the results of this study.

One serving of 6 wee-ki berries is:

- ◆ An excellent source of vitamin C. More than twice the vitamin C of an orange.
- ◆ A good source of dietary fiber with 4 grams per serving, 16% of the RDA.
- ◆ Very low in sodium and contains no cholesterol and virtually no fat.
- ◆ A good, low fat source of vitamin E, difficult to find in most foods.
- ◆ High in potassium. A single serving outranks bananas as the top low sodium, high potassium fruit.
- ◆ High in antioxidants, containing phytochemicals including carotenoids, lutein, phenolics, flavonoids and chlorophyll. These elements are thought to help in preventing cancers, promoting good eye health and boosting immunity.
- ◆ A good means of losing unwanted pounds. You get the most nutrients for the fewest calories from a single serving of wee-kis.

Wee-ki berries, with their high nutrient density, are better able to provide a substantial range of our daily needs in one delightful fruit. Since many of the nutrients in fruit are thought to be present in the skin and seeds, wee-kis provide one of nature's perfectly edible nutritional packages. Just pop one in your mouth for a full complement of natural goodness.



Selected Recipes

- ❖ *Wee-Ki Berry Tart with Walnut Crust*
- ❖ *Wee-Ki Berries 'n Cinnamon Cream*
- ❖ *Wee-Ki Berry Salsa*
- ❖ *Wee-Ki Berry Cooler*
- ❖ *Wee-Ki Berry Muffins*

Wee-ki Berry Tart with Walnut Crust

Walnut Crust (makes two 8 -10 inch tart shells)

serves 8

10 ounces finely chopped walnuts
1 cup (2 sticks) unsalted butter at room temperature
1/3 cup granulated sugar
3 cups all purpose flour
2 eggs, lightly beaten
1 teaspoon vanilla extract

1. Preheat oven to 350 degrees. Butter an 8" to 10" tart pan.
2. Put all ingredients in a large mixing bowl and mix until well blended, using an electric mixer or a wooden spoon. Divide the mixture and press into the prepared pans. Chill for at least 30 minutes.
3. Bake the crust for 25-35 minutes or until the shells are golden brown. Let cool on racks before filling.

(This recipe makes two tart shells. Bake the second one and wrap tightly in plastic wrap and freeze for a future use)

While tart shell cools prepare filling.

Filling:

12 oz. cream cheese
1/3 cup sour cream
1/2 cup sugar
1 1/2 teaspoons grated orange rind
3 tablespoons orange juice

Beat together softened cream cheese with sour cream. Add sugar, grated rind and juice and beat until smooth. Spread mixture evenly over prepared crust.

(Continued)

Topping:

60 Wee-Ki berries cut in half horizontally

12 orange slices with pith removed or 12 mandarin orange slices

Arrange Wee-Kis in an X design, fill empty areas with orange slices.

Glaze:

Melt 4 Tablespoons of red currant jelly over low

heat and brush over fruit in tart. Chill one hour and serve.



Wee-Ki Berries "n Cinnamon Cream

Ingredients:

About 60 Wee-Ki berries (approximately 3 cups)

1 pint heavy whipping cream

2-3 teaspoons granulated sugar

2 teaspoons cinnamon

Cut a quarter of the berries into halves, mix with remaining Wee- Ki berries. Divide berries between four wineglasses. Add cinnamon and sugar to cream and whip until stiff peaks form. Spoon cream over berries in glasses. Sprinkle with additional cinnamon if desired. Serves 4

Wee-Ki Berry Salsa

2 cups Wee-Ki Berries
1 Red onion
2 small jalapeno peppers
½ cup fresh basil leaves
2 pickled habenero peppers
2 teaspoons lime juice
1 teaspoon salt
1 tablespoon sugar (or to taste)
1 red bell pepper

Put onion, peppers and basil into a food processor and process, with quick pulses, until well chopped, add Wee-Ki berries and pulse for a few seconds until just chopped. Mix in lime juice, sugar and salt. Serve with tortilla chips or veggie sticks.

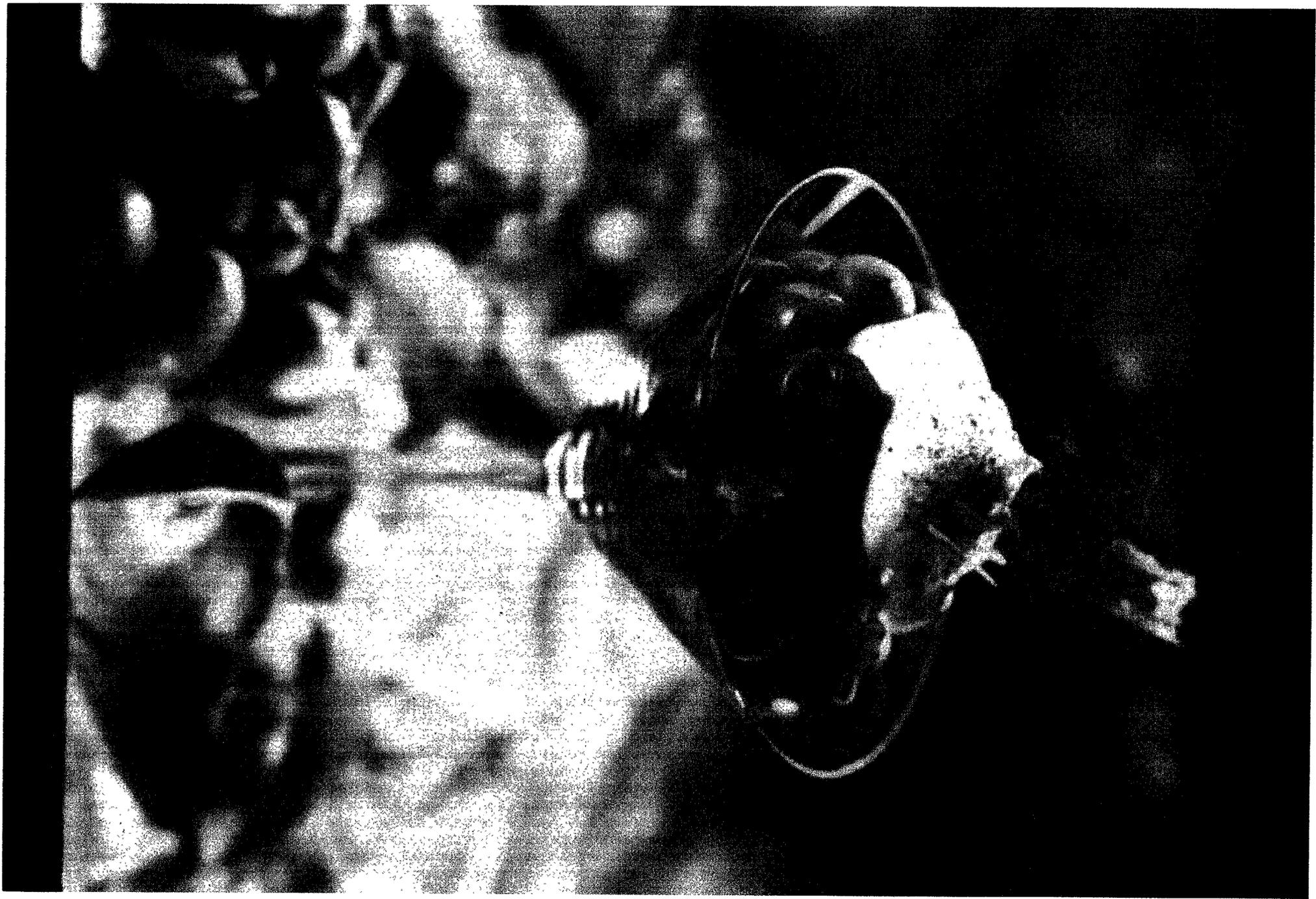
Wee-Ki Berry Cooler

20 Wee-Ki berries

4 cups lemon-lime soda (such as Sprite) or club soda
juice of two oranges

Ice Cubes

Pulse Wee-Ki berries in a blender until smooth. Place the Wee-Ki juice, soda and orange juice in a pitcher and stir to combine. Fill each glass with ice and divide the mixture among the glasses. For a drink with more punch, add 4 ounces of rum to drink mixture before stirring.



Wee-Ki Berry Muffins

- 2 cups all purpose flour
- $\frac{3}{4}$ cups granulated sugar
- 1 tablespoon baking powder
- $\frac{1}{2}$ teaspoon of salt
- 1 cup Wee-Ki Berries halved or quartered
- $\frac{1}{2}$ cup (1 stick) butter, melted
- 2 eggs
- 1 cup milk
- $\frac{1}{2}$ teaspoon cinnamon

Preheat the oven to 400degrees F. Lightly grease a muffin tin, including top edges.

In a large bowl, mix the flour, sugar, baking powder, salt, cinnamon and Wee-Ki Berries. Make a well in the center. Set aside.

In a medium bowl, beat the eggs. Add the butter and milk, and mix until blended. Pour the mixture into the well of dry ingredients and stir until just combined. Do not overmix.

Spoon the batter into the prepared muffin cups, dividing evenly.

Bake 20 to 25 minutes or until the tops are golden and a toothpick inserted in the center comes out clean.

Cool the muffins in their tins for 5 minutes. Remove the muffins from the tin, cool slightly on a rack and glaze with $\frac{1}{3}$ -cup fresh lemon juice and 3 tablespoons sugar. Stir and drizzle or brush on muffins.

Yield: 12 muffins

L. Market Information II

By Hurst Berry Farm (Oregon)



Fresh berries shipped worldwide

Committed to Excellence

December 2, 2002

Attention: Michael C. Son, Ph.D. RAC
Director of Regulator Affairs/QA
3699 Wilshire Blvd. Suite 700-19
Los Angeles, CA 90010

Dear Dr. Son

1. History of arguta commercialization in Oregon and anywhere. If possible, we need to establish that argutas have been sold to the public before October 1994.

Oregon received its first Arguta plants in the early 70's from Chico State, CA. These were planted at North Willamette Research and Extension center. In the mid-80's, some growers began planting small plots of Arguta. Stanley Nursery was instrumental in bringing in other varieties of Arguta. "Anna" seemed to be the most widely planted variety then. There was an attempt to market this fruit under the "Royal Kiwi" name. The marketing was mainly in the Portland area for fresh consumption. By the early 90's they had but all given up. There was some acreage that was planted but already pulled out. My introduction was in 1993. Joe DeFrancisco from NWREC brought me some fruit. I loved it. So, I began doing some research to find out how many were planted. There was only about 3 acres planted at that time. I contacted growers and prepared to do some initial offerings in 1994. We decided to call it "Baby Kiwi". We tried to trademark the name but the patent office told us the name was too generic. We took some of the fruit to the 1994 Produce Marketing Association Annual convention in Washington DC and sampled it. The "Baby Kiwi" was the hit of the show. So, from my hotel room at the show, I ordered as much nursery stock as I could get. The plan was to plant 15 acres in 1995 and 15 acres in 1996 and then see how the marketing was going from there. The marketing went fairly well until 1999, when our production began to hit its stride. In the fresh market we were struggling to introduce the product to consumers. The cost of demos in retail stores was over-whelming. We also found that the fruit did not have very good shelf life in vented clamshells we used for berries so we created a new clamshell. We struggled the next couple years until this year 2002. We had been trying to develop the Japan market and our efforts began paying off in 2002. About 40% of our crop was sold there.

2. Annual production, distribution, and sales information. Approximate numbers will be sufficient.

Fresh Market Utilization from our sales was 44,783 pounds in 2002. There was probably an available 100,000 pounds of total production available. The difference is the crop that was not picked because of sizing and defects. We have one competitor that probably had equal production to ours. So, the total production in Oregon and Washington was about 200,000 pounds.

3. Forms of argutas sold commercially (e.g. processed, wine).

95% of the Argutas as sold fresh.

Our competitor makes some chutney's and sauces with theirs also. We are beginning to make Baby Kiwi jam with some of ours.

4. **Current plantings**

We have 6 acres and our growers comprise about 25 additional acres. We have about ½ of the production of Oregon/Washington.

Not all acres are in full production. Our growers are contracted with us through the year 2007. If more production is needed, it would take about 4 years to take a planting to nearly full production.

I estimate that we could produce about 300,000 pounds with the current acreage.

5. Answers to #1 to #4 should contain your company's data since it will reflect accurate and supported information if possible. Information other than related to your company will be grateful and useful.

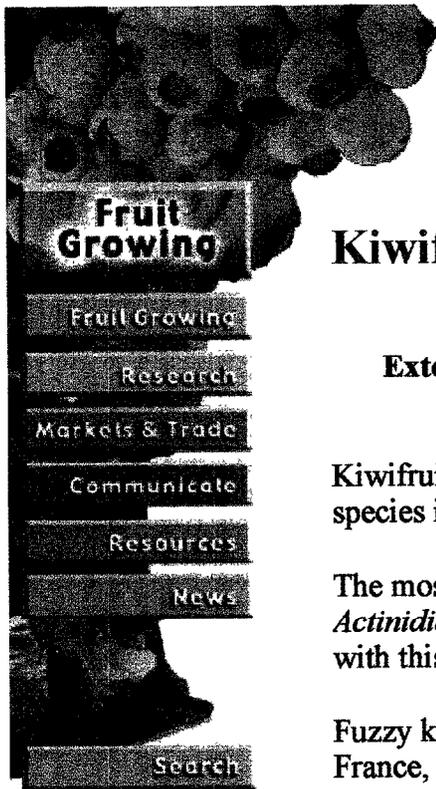
Hurst's Berry Farm was founded in 1980 when my wife and I moved to Oregon from Sebastopol, CA. Through a lot of hard work and dedication of employees, we have become the largest shipper of fresh berries from the Northwest. Our company now markets fresh berries on a year-round basis. We have operations in Mexico and import from NZ, Chile, Argentina and Canada. Blueberries are the main commodity followed by Blackberries and Raspberries.

Sincerely



Mark D Hurst
President

M. Internet References



Kiwifruit Cultivars

Bernadine Strik and Helen Cahn

**Extension Berry Crops Specialist and Research Assistant
Oregon State University**

Kiwifruit are native to southeast Asia. There are more than 50 species in the genus *Actinidia*, and many have commercial potential.

The most common kiwifruit species grown commercially is *Actinidia deliciosa* cultivar Hayward. Consumers are very familiar with this brown, fuzzy fruit.

Fuzzy kiwi are grown commercially in New Zealand, Italy, Japan, France, Australia, Greece, Chile, and California. There is some commercial production in Oregon; however, this species is not extremely hardy and may suffer cold injury in some years in the Pacific Northwest.

More hardy kiwifruit species also are available. They include the following:

- *A. arguta*, known as the hardy kiwi or arguta (marketed as baby kiwi in Oregon and grape kiwi in British Columbia). This species shows promise for commercial production in the United States.
- *A. kolomikta*, also known as kolomikta or Arctic Beauty
- *A. polygama*, or silver vine

Although some people claim they eat the skin of fuzzy kiwi, most peel these fruit. However, the hardy, kolomikta, and silver vine kiwifruit have very edible skin. You can pop these delicious, small fruit right into your mouth.

Kiwifruit are relatively high in acid, reaching nearly 2 percent of fresh weight at maturity and declining after harvest. Kiwifruit are one of the best natural sources of vitamin C, with a level of at least twice that of the orange.

The fruit of most common kiwifruit species and cultivars have green flesh that does not brown when cut.

Fuzzy kiwifruit can be stored for months after harvest. However, the hardy and kolomikta kiwis can be stored for only two months at

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most at 32-35.5° F (0-2°C) (see Storage of Kiwifruit).

The kiwifruit is a dioecious plant -- it has separate male and female plants (with the exception of a few self-fertile cultivars). It is essential to plant male vines for pollination and crop production.

Plant male and female vines of the same species. In general, 1 male is required for every 6 to 10 females. Self-fertile cultivars require no male pollinator, although fruit size may be larger with cross-pollination.

Yield per plant varies with species and cultivar. Hayward (*A. deliciosa*) yields from 25 to 200 pounds per plant, whereas *A. arguta* yields from 50 to 100 pounds per plant..

A. kolomikta and *A. polygama* leaves contain a substance that has an effect similar to catnip. In China, kiwivine leaves reportedly are fed to large cats as a sedative. You may find that cats become a pest of your new kiwifruit planting!

The information below on ripening dates, fruit weights, and plant performance is approximate. It is based on limited test results from a cultivar planting at North Willamette Research and Extension Center (NWREC), Aurora, Oregon. Performance may vary with location.

"Fuzzy" Kiwifruit

Actinidia deliciosa, fuzzy kiwifruit, is the most widely available species. Generally, fruit are large, with a green skin covered with brown fuzz. Vitamin C content ranges from 100 to 200 mg per 100 grams fruit. The most common commercial cultivar is Hayward, which is found in supermarkets throughout the world. However, other varieties also are available.

Fuzzy kiwifruit can be grown in Oregon. Hayward needs a growing season of about 225 to 240 frost-free days. However, although this species should tolerate temperatures down to 10°F (-12°C), plants may be damaged at slightly higher temperatures.

Cold damage usually occurs when temperatures drop during the night after a warm spell. The trunk usually is damaged, which weakens older plants and sometimes kills young vines. Although methods such as wraps and plastic sleeves may help to protect the trunk against freeze injury, they are not always effective. The trunk's sensitivity to cold decreases with age.

Young kiwifruit shoots and fruit are very sensitive to frost injury. Temperatures of 30°F or less (-1°C) for only 30 minutes can

severely damage shoots in the spring and fruit in the fall. Still, these kiwifruit can be grown successfully with overhead irrigation for frost protection.

Although many other fuzzy kiwifruit cultivars are available in other production regions, the following cultivars are available and have been tested in the Pacific Northwest. All produce bright, green-fleshed fruit.

Ripening dates given below are based on when fruit reached 6.5° Brix (% sugar) at NWREC, a harvest date criterion for long-term storage (see [Kiwifruit Maturation](#)).

Hayward

Hayward is the cultivar usually found in stores. Its large, fuzzy, brown fruit with good, sweet flavor has made it popular. Shoots are sensitive to frost injury in spring. This cultivar is recommended only for areas of Oregon with mild winters.

Ripening date: October 7-12

Fruit weight: 80-90 grams

Vine growth: vigorous

Bruno

Bruno produces a large cylindrical fruit that is darker brown than Hayward. It has a lower winter chilling requirement (50-250 hours at 32 to 45°F), and therefore may be more sensitive to late winter cold spells, particularly after a warm period.

Saanichton 12

This cultivar comes from Vancouver Island, British Columbia, where it has been grown for more than 30 years. Fruit are large, somewhat more rectangular than Hayward, sweet, and of good flavor. It seems more hardy than Hayward.

Ripening date: October 1

Fruit weight: 70-80 grams

Vine growth: vigorous

Blake

This is a relatively new cultivar. It is claimed to be "self-fertile," but it does benefit from cross pollination. Fruit are smaller than Hayward or Saanichton 12 and are more oval in shape. Flavor is inferior to Hayward and Saanichton 12.

Ripening date: October 1

Fruit weight: 60-70 grams

Vine growth: vigorous

Male (*A. deliciosa*)

A pollinator is required for all fuzzy kiwi. There are many cultivars/selections of males available. Examples include Matua, Tomuri, Cal Chico No. 3, Chico Early, and Chico Extra Early.

Hardy Kiwi

This kiwifruit species, *A. arguta*, is hardy to -10 to -25°F (-23 to -32 °C) under most conditions. Damage to the trunk from cold temperatures rarely occurs in Oregon; however, frost damage to young shoots is more common.

Maximum hardiness levels given for this species reflect only midwinter hardiness. This species has a low chilling requirement (winter rest period satisfied by temperatures at 32-45°F) and may be sensitive to cold injury at higher temperatures when warm weather precedes a cold spell, particularly in late winter.

Unfortunately, warm temperatures in February or March in Oregon may promote early bud break, making this species very susceptible to frost damage of the young shoots. Only additional testing will show how much of a problem this may be for our region.

Keep in mind that young vines may be more cold sensitive. Protect them with trunk wraps (see [Kiwifruit Vineyard Planning, Planting, and Spacing](#)).

Hardy kiwi plants are very vigorous and produce a good quality, highly aromatic fruit that is quite different from the fruit of *A. deliciosa*. Fruit are smooth skinned (skin can be eaten), generally green in color, and much smaller than the fuzzy types. The flavor is excellent, but varies by cultivar. Vitamin C content is very good at 10 to 70 mg per 100 grams fresh fruit.

In France, hardy kiwi are cultivated commercially, but acreage has been limited due to marketing limitations--small fruit size, short shelf life, and a limited ripening period. Also, the fruit on a given plant ripen unevenly, which makes harvest difficult unless fruit are picked under-ripe and forced to ripen. Vines are very vigorous, and considerable pruning is required to keep growth under control.

In general, hardy kiwifruit do not store as well as the fuzzy types. Therefore, you likely will see these kiwifruit in stores up to only a couple of months after fall harvest.

Currently, relatively little hardy kiwifruit is grown commercially. However, you no doubt will hear and see more about these types, as they do have good quality, attractive fruit.

Certainly, the hardy kiwifruit are well suited to the home garden

and, with an appropriate market, to commercial production as well.

Fruit of these hardy kiwi are best when ripened on the vine to maximize development of aroma and flavor; however, shelf-life then is shortened. The following harvest dates are based on sugar levels of 8 to 9°Brix . (If left on the vine the fruit will reach 18 to 25°Brix.)

Ananasnaya

This is the most popular hardy kiwifruit cultivar currently available. Its Russian name means "pineapple-like". You also may hear this cultivar referred to as "Anna".

Fruit are of very good quality, with a good aroma and sweet, intense flavor. They have a green skin that develops a purple-red blush in full sun. Skin may be slightly tough.

The cultivar Ananasnaya brought to Oregon is *A. arguta* . However, the Russian cultivar Ananasnaya is *A. kolomikta*; more than one cultivar with the same name may be available in nurseries.

Harvest date: September 14-30

Fruit weight: 9-14 grams

Vine growth: very vigorous

74-49

This numbered selection/cultivar came from a USDA program in Chico, California. This cultivar produces very good quality fruit of similar size and quality to Ananasnaya.

Ripening date: September 7-14

Fruit weight: 7-12 grams

Vine growth: very vigorous

Meader

We presently are not testing this cultivar at NWREC. However, it is reported to produce good quality, medium-sized fruit. Note that there is a male "Meader" also is available; do not be confused.

A. arguta* var. *cordifolia

Not yet widely tested in the Pacific Northwest. Fruit are reputed to be of good flavor and very sweet. Plants are very vigorous and produce high yields. Flowers may be wind pollinated.

Ken's Red

Not widely tested in the Pacific Northwest, this kiwifruit from New Zealand is a cross of *A. arguta* var. *cordifolia* and *A. melanandra*. Fruit are nearly square to cylindrical with a "nib" at the tip. They are bright green in summer and turn red-skinned late in the season. Vines are very vigorous.

Geneva

This cultivar has not been widely tested in the Pacific Northwest, although there are preliminary results from British Columbia. Plants ripen earlier than Issai and Ananasnaya and are about the same size. Fruit have a good flavor.

Issai (self-fertile)

This cultivar from Japan is less vigorous than the other hardy kiwifruit cultivars listed above. Fruit are smaller in size, somewhat cylindrical, come to a point, and are fully green. Flavor and aroma are very good. Harvesting is somewhat more difficult than the other hardy kiwi, because fruit are smaller and ripen rather unevenly within a cluster. This cultivar, although self-fertile, produces larger fruit with seeds when cross pollinated. Vines are slightly less hardy than other *A. arguta* at 0 to -10°F (-18 to -23°C).

Harvest date: September 1-4

Fruit weight: 4-9 grams

Vine growth: moderate vigor with lower yield per vine than the other hardy kiwi.

Male

Pollinator for above *A. arguta* species. About 1 male is needed for every 8 females. There is evidence that *A. arguta* cultivars can be pollinated by *A. deliciosa* males, which produce more pollen than the *arguta* males. However, *A. deliciosa* males are much less hardy than *A. arguta* males, thus you risk crop loss to cold injury when using the fuzzy males.

Other cultivars/selections that may be available include Dumbarton Oaks, 74-45, 74-8, and Michigan (reported to have almost twice the fruit size of Ananasnaya). However, these have not been tested in Oregon.

Kolomikta Kiwi

These kiwi types, *A. kolomikta*, are hardy to -40°F(-40°C), but shoots are sensitive to frost damage. In the Willamette Valley, Oregon, *A. kolomikta* cultivars break bud earlier than *arguta* types in late winter. For example, all shoots were killed by cold in February 1995. Available cultivars differ greatly in fruit shape, size, color, and flavor. Fruit of *kolomikta* are smaller than those of *arguta* kiwivines. Plants are considered good ornamentals, because of their variegated pink leaves, particularly in the male.

The fruit are small to medium sized, but are very sweet with good aroma and flavor. Fruit are valued for their exceptionally high vitamin C content -- 700 to 1,000mg/100 grams fruit (10 times higher than Hayward and 20 higher than citrus).

Fruit are best when ripened on the vine to maximize aroma and flavor development; however, shelf-life then is shortened.

It has been difficult to establish *A. kolomikta* at NWREC. Vines planted in 1990, even after 4 years, grew little and produced almost no yield. Thus, it is hard to evaluate their performance relative to the hardy kiwi.

Perhaps this species is more sensitive to wet soil or phytophthora root rot -- a possible reason for its poor growth at NWREC. There also are reports that *A. kolomikta* requires some shade for optimal growth. This species also has not performed well in trials in British Columbia.

Nevertheless, the following cultivars may perform well at other sites and certainly would make good ornamental fruit plants in the home garden. This species does not have the commercial potential of *A. arguta*.

Krupnopladnaya

This cultivar, "large fruit" in Russian, is the largest of the arctic beauties tested in Oregon. Flavor is good and sweet. Plants have low to moderate vigor compared to *A. deliciosa*.

Pautske

This is the most vigorous of the arctic beauties tested in Oregon. Fruit are large and of good quality. Plants are more vigorous than those of Krupnopladnaya, but still have lower vigor than *A. deliciosa*.

Male

A. kolomikta male needed to pollenize the above cultivars.

Silver Vine Kiwi

This species of kiwifruit, *A. polygama*, is called silver vine for the silvery-white color of the young leaves. Fruit have orange skin and flesh, and are cylindrical with a point at the base. Although several sources say fruit are edible with a sweet, peppery taste when ripe, we have not had good success with this species at NWREC. Our fruit goes from green and unripe to orange and soft with an astringent peppery flavor. Plants are moderately vigorous, but more susceptible to cold injury than *arguta* or *kolomikta*. Some clones are self-fertile.

This species does not have much commercial potential for Oregon. However, it does make a nice ornamental.

Harvest date: September 1-4

Fruit weight: 6-9 grams

Vine growth: moderate to low vigor at NWREC

This fact sheet is adapted from Oregon State University Extension Publication EC1464, *Growing Kiwifruit*, which can be purchased for \$3.25 from the Department of Extension & Experiment Station Communications. [How to Order](#)

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Hurst's BERRY FARM



Produce Buyers throughout the world recognize Hurst's Berry Farm as the **WHOLESALE** source for premium quality **FRESH** specialty berries from the Northwest and also from around the Globe. With an ever expanding product line combined with extended growing regions fresh berries are available year around. Hurst's specializes in providing "jet fresh" product to your local wholesale produce market,

food service company and retail stores.

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**Coming soon!!
Online Store
Featuring Jams,
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White Currants

6oz Blues

4.4oz Blues For Export

Blackberries

Baby Kiwi

Northwest Cranberries



**Book your shipments early.
Minimum order of 24 Trays per
shipment.**

Get your orders in now!!!!

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Postal address

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September 12, 2002

updated



Hurst's

BERRY FARM



THE BEGINNING -. 1980

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It was 1980 when Mark and Patty Hurst first laid eyes on a small berry farm in Sheridan, Oregon. Raised the son of a Northern California apple grower, Mark and his wife were determined to find a new place to raise their family and to build a business that they could call their own.

That 3 1/2 acre farm they bought became the foundation for what is today the largest shipper of fresh berries in Oregon. For the next four years they would build the fledgling business, harvesting, loading and driving the berries south to the San Francisco Bay Area Markets three times a week in a beat-up old van.

Then, in 1984, they joined in partnership with Patty's sister Debbie and her husband Dan Caldwell. With this new infusion of capital and commitment to excellence added to a growing a reputation for service and top quality product the Hurst Berry Farm was truly on its way.

As the berry industry slowly evolved from shipping everything in loose berry flats to half-pint containers wrapped in cello we have constantly explored new ways of packing



our berries to improve this vital link from the farm to your market.

In 1991 it became clear that the plastic clamshell with its improved ventilation and re-cycled material was essential to maintaining a premium package.

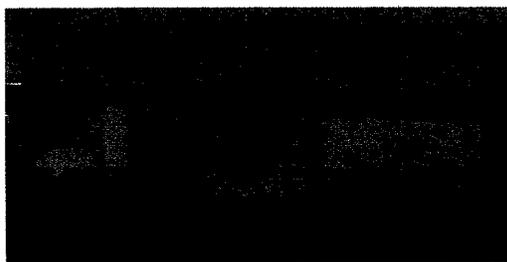
Today, all berries we ship are packed in clamshells. To meet customers demands we now offer multiple sizes of clamshells depending upon the product. As an example our blueberries can be packed in five pound, two and a half pound, pint and one-half-pint size clamshells. And of course we can custom pack to meet your specific needs.

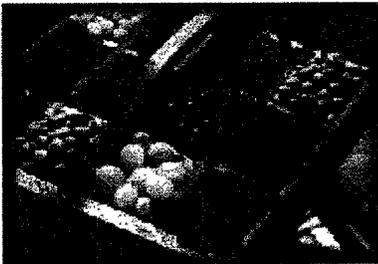


Today, produce buyers throughout the United States and World recognize Hurst's Berry Farm as the source for premium quality fresh berries. Farming over 70 acres and shipping and packing for more than 50 of Oregon's top growers, the harvest of more than 700 acres different berries are available June through October.

With an ever expanding product line we are constantly on the lookout for new varieties and types of fresh berries. If we can't get the quality we need from the existing varieties, we will often experiment with other varieties. And if we can't get the quality we need from existing suppliers . . . we grow it ourselves.

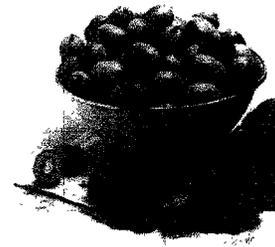
The newest addition to our product line, the Baby Kiwi is one of the most exciting new fruits to come into the produce department in a long time. Miniature kiwifruits with the same flavor and texture are now being grown here on the farm.





Baby Kiwi

No larger than a grape, this versatile berry-like fruit is packed with flavor and has a smooth, edible skin. The convenience of its fuzz less exterior makes it possible for customers to pop Hurst's Baby Kiwis into their mouths as a quick and easy snack. Because their miniature size and smooth, edible skin is a new experience for your customers, you will benefit by displaying them alongside other berries. Cut a few in half to showcase their beautiful and familiar interior, and sample them with toothpicks for a quick taste sensation.



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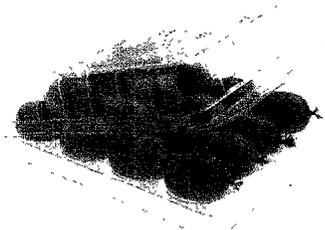
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Hurst's Baby Kiwis are more than simply a flavor-packed snack. They are rich in Vitamin C and naturally low in fat, cholesterol and sodium. Hurst's Baby Kiwis are also high in fiber and a great source of potassium, Vitamin E and magnesium. Six ounces of this delicious fruit only contain 130 calories.



Hurst's Baby Kiwis should be stored and displayed in dry refrigeration. The berries should not be damp because moisture speeds up the rate of decay. Shelf life for Hurst's Baby Kiwis, once they reach your local

produce market is 7 to 14 days. For best results, they should be consumed within one week.



Hurst's Baby kiwis are available in molded plastic clamshell packs and sized 8, 10, 13, and 16 Baby Kiwis per package; each flat contains 12 of these clamshells. Our exclusive new package cradles each of these luscious gems separately, much like an egg carton shelters its fragile contents. For Hurst's Baby Kiwis, this type of packaging has several benefits over the traditional berry clamshell; lower unit price. fruit is separated by size for a more attractive presentation, improved venting to better retain moisture and weight, and it prevents contact and bruising.

Baby Kiwi are available mid-September through the end of October almost exclusively from Hurst's Berry Farm. Due to their limited quantities, successful produce managers position this berry-like fruit as a "real find" consumers will want to stock up on to be sure they are among the fortunate to have the opportunity to savor this precious fruit.

Baby Kiwi Recipes

White Chocolate Dipped Baby Kiwi
Baby Kiwi Recipes
Baby Kiwi Tart
Baby Kiwi Bread
Kiwi-Lime Chicken Salad
Baby Kiwi and Cherries Dessert
Chicken, Shrimp and Baby Kiwi Kebabs

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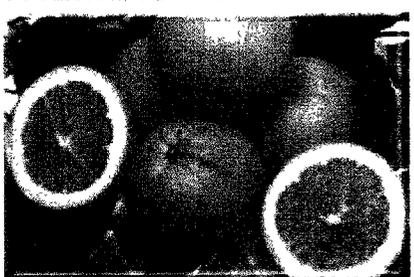
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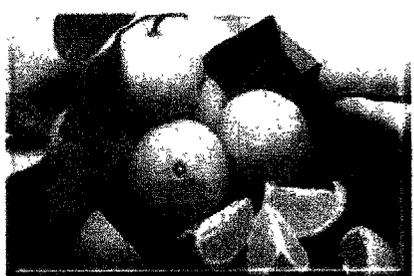
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Available Now



Cara Cara Oranges
 These pink navel oranges are extremely delicious. The fruit and juice are a deep orange with sweet-cherry flavored undertones.

Farm Fresh



Satsuma Tangerines
 Right from California's backyard come an early variety of sweet Tangerines.

Special Offers



The Gift of Choice
 Running out of gift ideas? Send Melissa's Online Gift Certificates this holiday season.

Other Specials

Gourmet Gifts

Visit our gallery of **Gifts** to find these and other great selections. Place orders for **Christmas by December 20th for Overnight Shipping** and **New Year's by December 21st.**



Exotic Centerpiece Basket
 Stunning in a home or office and filled with a colorful assortment.



Christmas Fruit Sleigh
 Dashing into the holiday season...our Christmas Sleigh Basket is back!



Deluxe Fruits and Munchies
 A top five favorite among Melissa's gift selections.

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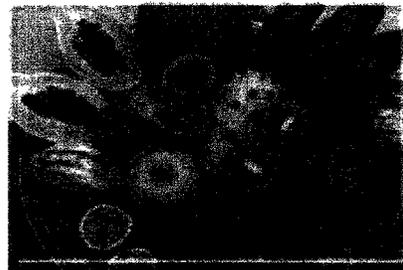
Special Cookbook Offer:
Martin Yan's Culinary Journey Through China

Full Flavor



Meyer Lemons

Full of tart flavor but less acidic than the traditional variety is why these lemons are wonderful in fresh pastries. 



Exotic Fruit Club

The gift that continues to give throughout the year. 



Chestnut Roasting Kit

A unique gift, this kit contains all the essentials for making great tasting roasted chestnuts. 

Asian Pear

Chestnut and Fennel Soup

Braised Chestnut and Pear Confit

Meyer Lemon Meringue

Tips

Let's take it out of cook

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Melissa's Chef Ida R introduces Nuevo Latino Cuisine.

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Product info

Fruits : Fresh Fruits

BABY KIWI

Baby Kiwis, cousins of the Kiwi Fruit, are luscious berries with smooth skin, delicate seeds and are similar in size to the grape. They are high in nutritional value and make excellent snacks. Baby Kiwis' beautiful green skin lacks the undesirable fuzz found on the larger, well-known variety. They are just as delicious and refreshing as well. Baby Kiwis are handpicked and immediately hand-packed with care. They have a shelf life of 7 to 14 days. Eat Baby Kiwis whole right out of the hand or create delightful snacks and hors d'oeuvres for any occasion.



[Click here for catalog summary](#)

Seasonality: Limited time from early-mid autumn.

Selection & Storage: Baby Kiwis have a very short season and are in limited supply. They are hand selected for excellent quality. Their shelf life is 7-14 days consumers can enjoy them the day of purchase or they may be kept up to 3 days refrigeration.

Display: Display next to other exotic fruits and berries.

Preparation: Enjoy right out of the hand as a quick snack or serve chopped salads, or use as cereal and pancake topping.

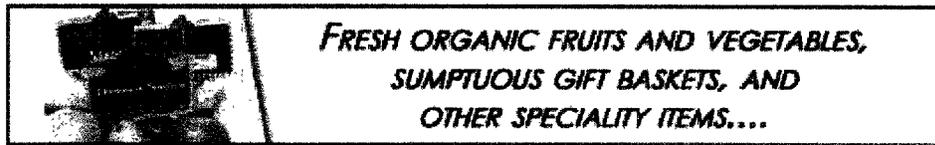
UPC: 045255-12163

Nutrition Facts

Amount per Serving:		90 per serving., serv.size 140g
Calories		
Total Fat	0.5g	
Cholesterol	0g	
Sodium	5mg	
Total Carbohydrates	21g	
Fiber	5g	
Sugars	15g	
Protein	1g	
Vitamin A	4%	
Vitamin C	230%	
Iron	4%	

Calcium 4%

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Melissa's World Variety Produce offers the best variety of organic and exotic fruits and vegetables. Buy healthy and natural organic produce, gourmet food, corporate gift baskets and holiday treats online and have them delivered direct to your door. Browse our cookbook of free Asia vegetarian and holiday recipes or enjoy our magazine.

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Catalog

BABY KIWI

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This item is shipped overnight delivery

[Click here to get additional product information](#)

Pack: 2 trays, 6 ounces each

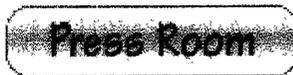
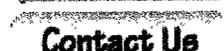
Price: \$18.95

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 *Gift Shopping Made Easy...*

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Melissa's World Variety Produce offers the best variety of organic and exotic fruits and vegetables. Buy healthy and natural organic produce, gourmet food, corporate gift baskets and holiday treats online and have them delivered direct to your door. Browse our cookbook of free Asia vegetarian and holiday recipes or enjoy our magazine.



About Our Company



center - Karen Caplan,
left - Frieda Caplan
right - Jackie Caplan Wiggins

Frieda's®, Inc., is the nation's leading marketer and distributor of specialty produce. The company supplies grocery retailers, wholesalers and food service distributors with more than 500 different items through its branded product lines: Frieda's®, Cocina de Frieda®, Asian Specialties™, and Vegetarian Solutions™ for meatless meal ideas for the produce department.

Known nationally for introducing exciting new and exotic foods to American produce departments and consumers, the media dubbed Frieda's 'The Company that Changes the Way America Eats.' Since the early '60s, Frieda's is credited with introducing such table-staples as Kiwifruit, Brown Mushrooms, Alfalfa Sprouts, Spaghetti Squash, Jicama, Shallots, Mangos, Donut® Peaches and a wide variety of Latin and Asian specialties.

Frieda's, Inc., is the first wholesale produce company in the U.S. to be founded, owned, and operated by a woman. Still today, Frieda's, Inc. is a family-owned and operated business. Frieda Caplan is founder and Chairman of the Board.

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friedas@aol.com



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Daughter Karen Caplan is President and CEO, and Jackie Caplan Wiggins is Vice President.

Frieda Caplan founded the company in 1962. The first milestone was to turn fresh mushrooms into a staple when most grocery stores sold only canned mushrooms. Caplan's marketing abilities became recognized worldwide with her success in the discovery and promotion of the Chinese Gooseberry. She renamed it after New Zealand's famous fuzzy bird, the Kiwi, and introduced Kiwifruit to domestic produce departments and consumers, helping to create a new global industry. By the late '60s, New Zealand Kiwifruit had caught on and Caplan soon persuaded California growers to plant the fruit. Following its impressive success with the Kiwifruit, Frieda's, Inc., quickly gained a reputation in the produce industry for its ability to supply unusual and exotic, premium-quality produce, allowing the company to greatly expand its product line.

Realizing the importance of educating consumers on the usage of new and unusual produce items led Frieda's to become one of the first companies to attach its own brand name labels to produce. Consumers soon learned that they could rely on Frieda's informative packaging, which includes product descriptions, usage, handling and storage tips, country of origin, complete nutritional information, kitchen-tested recipes, and an invitation for free recipe brochures. In October 2000, Frieda's launched their new cookbook by Karen Caplan called *The Purple Kiwi Cookbook*, www.purplekiwicookbook.com, a collection of delicious recipes featuring some of the world's most exotic produce. In May of this year, the cookbook received the Benjamin Franklin Award for the "cookbook" category, by the Publishers Marketing Association.

Consumer response to Frieda's offer has been overwhelming. Each week the company receives 300 - 500 letters and e-mail messages, which are answered daily. Recently, Frieda's jumped again to the forefront of the produce industry by becoming the first to offer product information and recipes via e-mail (friedas@aol.com) and through a consumer 800#. Both are listed on all of its packaging materials.

In June 1996, Frieda's launched (www.friedas.com). The first on-line reference source for specialty fruits, vegetables and complementary items. And in 1999, re-launched the website with a new look, updated information, more recipes and exciting new features.

Today the Los Alamitos-based company maintains an 85,000-square-foot warehouse that distributes produce to retailers and food service distributors in the U.S. and Canada. In addition, the company has a mail-order division, Frieda's By Mail, that serves the foodservice industry, special orders and gift baskets.

Having grown to the tenth largest woman-owned and -operated business in Orange County with more than 125 employees, Frieda's operates on the philosophy of 100% customer satisfaction, which was instituted by president Karen Caplan in 1992 to assure quality and superior customer service.

Frieda's, Inc., is continuously seeking out and discovering new fruits,

vegetables, grains, legumes and other interesting foods from around the world. Its most recent introductions include Edamame (soybeans), South African Baby Pineapples, Baked & Dessert Tofus and Dried Chile Mango.

Frieda's Inc.
4465 Corporate Center Dr.
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