

## HEALTH CORNER

# Taiwang Banana Is a Hit at the Kosrae State Fair

By Dr. LOIS ENGLBEGER  
THE KASELEHLIE PRESS

KOSRAE - Twelve *Taiwang* banana recipes were served September 9, at the Kosrae State Fair as an exhibit to demonstrate the many tasty ways that this common vitamin A-rich banana can be prepared. The exhibit also included four vitamin A-rich giant swamp taro recipes, *Ainpot Pasruk Siminton*, *Kirngesi*, *Fukeh*, and *Waarwar*.

Ms. Julie Timothy, College of Micronesia Nutrition Educator, organized the exhibit and she and other homemakers prepared the recipes.

Lieutenant-Governor Gerson Jackson, who expressed how he liked the recipes, said this: "I am impressed that *Taiwang* can be prepared in a way that is appealing and has great taste." He said that he supported this activity using *Taiwang* and encouraged further education along these lines, not only in the community, but also within the government.

The *Taiwang* banana was ana-

lyzed recently and was found to contain 447 micrograms of the provitamin A carotenoid beta-carotene. This is over 10 times the level found in the *Us Kofafa (Uht en Menihle)* banana variety. Carotenoid-rich foods have been found to protect against diabetes, heart disease, certain cancers, and vitamin A deficiency.

Although this banana has been considered as a lowly banana with a poor image, it grows and produces very well and is very tasty, much sweeter than most bananas, and has important health benefits.

The recipes presented at the exhibit included *Taiwang* pancake, rice *us*, pie, turnover, banana bread, cupcakes, giant swamp taro with *Taiwang*, *Pilolo*, *Kurial*, tempura *Taiwang*, *Ainpot* with *Taiwang* and soft taro, and *Ainpot* with green banana and ripe *Taiwang*.

People are encouraged to plant *Taiwang* and other vitamin A-rich bananas and giant swamp taro varieties for their family's food and enjoyment.

The presentation was sponsored

by the Task Force Sight and Life of State Government, Basel, Switzerland, and the Kosrae



Lieutenant-Governor Gerson Jackson admires the *Taiwang* banana and recipes at the College of Micronesia-Kosrae Campus exhibit.

# HEALTH NOTES

## New Pohnpei Food Posters are Now Available

By Dr. LOIS ENGLBERGER  
*The Kaselehlie Press*

KOLONIA, Pohnpei - A 10-page set of laminated color photographs of Pohnpei food crops, including different varieties of banana, breadfruit, giant swamp taro (*mwahng*), and pandanus, can now be obtained from the Pohnpei Public Health Department. These have been prepared with the support of the Australian Embassy under the Direct Aid Program, Promotion of Local Foods for Health and Food Security Project.

The photos present the provitamin A carotenoid content of the selected local foods that have now been analyzed, comparing light-colored versus yellow and orange-colored edible portions and the

different nutrient content. The varieties with the yellow and orange-colored flesh have a higher carotenoid content, for example, the banana varieties of *Karat*, *Uht en Yap*, *Taiwang*, *Ipali*, *Mangat*, *Lakatan*, *Lakatan Weitahia*, and *Uht en Kerenis*. Provitamin A carotenoids protect against vitamin A deficiency. Epidemiological evidence indicates that carotenoid-rich foods may also protect against diabetes, heart disease, and certain cancers.

One message of the teaching set is to eat yellow varieties to maintain good health. The posters also show that even the light-colored varieties contain some carotenoids and so even they

have more than rice, which contains none at all.

The second aim of the teaching set is to encourage familiarity and increased production and con-

sumption of the varieties like *Karat*, *Uht en Yap*, *Mangat*, and *Ipali*, which have become rare in Pohnpei in recent years.



Dr. Ellaser Johnson, Pohnpei Vitamin A Coordinator and Medical Officer, and Ms. Yumiko Paul, Nutritionist, Public Health Department, showing sample posters.

# HEALTH CORNER

## Local Fish Liver - Vitamin A-rich and Safe

Submitted by Dr. Lois Engländer

Recent analyses on the liver of Pohnpei tuna and parrotfish show that they are high in the essential nutrient retinol (vitamin A). Also, the fish liver samples were found to be within safe limits of the natural contaminant mercury.

Fish liver and all types of liver are reported to be rich sources of vitamin A, as liver is the organ where vitamin A is stored. However, food composition tables had no data for the vitamin A content of fish liver and no data were available on fish liver from Pohnpei or other islands of the Federated States of Micronesia (FSM).

Health experts warn that mercury is a natural contaminant that may concentrate in organ meats. Studies are needed to confirm that local foods do not contain high mercury levels, as mercury damages the nervous system, espe-

cially the brain. If pregnant and breastfeeding women eat too much mercury, it can adversely affect the child's intelligence, coordination, and memory.

There are distinct differences in the appearance and taste of different fish liver. Yellowfin tuna liver (*eh en karangahp*) and two kinds of parrot fish liver (*lidoi* and *mwahmw mei*) are local delicacies and are often eaten as sashimi. Skipjack tuna liver (*eh en kasuo*) has a strong taste on its own, but is well-liked by many people when it is cooked and prepared as part of a dish. All these types of fish liver were analyzed. It was not possible to get samples of shark liver, which is eaten by many people in the Mortlocks and other parts of FSM.

The samples were prepared as composite samples, made up of



First photo: Liver of a parrotfish in Kosrae, shown with the fish.  
Second photo: Livers of parrotfish, yellowfin tuna, and skipjack tuna.

cooked fish liver from a number of small fish (from 6 to 12 fish) weighing around 500 grams (about a pound) in weight. The fish liver themselves weighed from 1 to 60 grams. Two sets of samples were analyzed for retinol and mercury by the Institute of Applied Sciences of the University of the South Pacific in Suva, Fiji, in February and November 2002.

The retinol content ranged from 3200 µg/100g in the *lidoi* parrot fish to 204,012 µg/100g in the yellowfin tuna liver. A 60-gram portion (about 3 tablespoons) which was the average weight for the yellowfin tuna liver for the sample) would provide over 200 times the daily estimated requirements of a non-pregnant, non-breastfeeding woman. Pregnant women are advised to avoid liver because of the high levels and danger of toxicity, which could cause harm to the unborn child.

Informants in FSM said that yellowfin tuna liver especially is

well-liked. It is eaten, but often it may be used for bait or is discarded during cleaning before it is sold at the market. Some fishermen and government officers indicated that if the public health department could run a campaign on the value of fish liver and create a demand for fish liver, it would be possible to develop this new salable commodity item. Fishermen could collect the livers, bag them in a small plastic bag, and sell them.

In summary, there are good sources of vitamin A from local FSM seafood, in particular fish liver, and it is safe to eat. One type of tasty liver (yellowfin tuna) is a nutritious food source that is presently underutilized.

NOTE: Much discussion has also been held in Kosrae on fish liver. They are called there by these names: *esa in owlwohl* (yellowfin tuna), *esa in katsuo* (skipjack tuna), and *esa in mweshik* (parrotfish).

Photo courtesy of Lois Engländer

# HEALTH LIFESTYLES

## How Many Bananas Do You Know?

By Dr. LOIS ENGLEBERGER  
The Kaselehlie Press

There are 55 names of bananas in Pohnpei, as recorded in 1991 by Bill Raynor, The Nature Conservancy. One group of 93 College of Micronesia (COM) Pohnpei Campus students demonstrated in the year 2002 that they knew 8 different bananas on average, one student listing 19 kinds.

This year in Fran Chaine's Health Science class SC101 at the COM Pohnpei Campus, 18 students were asked to write down all the names of banana varieties that they knew (without talking to each other). Selino Santos from Kitti topped the class with 16 varieties. Still no study has been done to find out the average number of banana varieties that Pohnpei adults can list, although commentators suggest that older people have a greater knowledge of the local foods.

Is it important to know a variety of bananas? And is it important to grow and eat a variety of bananas and other local foods?

There are only a few bananas sold regularly at the local market: *Utin Menihla*, *Utin Ruk*, and *Inasio*. Yet with a variety of different bananas, you would have a variety of tastes.

Also there is a variety in nutrient content and potential health benefits in the different varieties (See KP article May 15-28, 2003). *Akadahn*, *Akadahn Weitahta*, *Ihpali*, *Karat*, *Mangat*, *Taiwang*, *Utin Kerenis*, and *Utin Yap* have a much higher provitamin A carotenoid content than the commonly marketed bananas.

The above listed varieties can be prepared in many recipes, acceptable for different age groups, including infants and adults. So it makes sense to promote the production and use of the nutrient-

rich tested varieties to eat and enjoy with family members.

Adelino Lorens, Pohnpei Chief of Agriculture, started a project in March 2003 documenting traditional local food crops with support by the Secretariat of the Pacific Community. Apparently there are a number of bananas with multiple names in Pohnpei, such as *Uti Rais* which is also called *Kudud*. *Ilario* may be the same as *Dakuru*, and *Utin Guam* may be the same as *Utin Menihla*.

Yet there are also distinct differences among the same bananas. There are three kinds of *Karat*, the vitamin A-rich tradi-

tional weaning food. *Karat Paka* has an oblong fruit with rough skin and the bunch and finger (the name for an individual banana fruit) are markedly larger. *Karat Pwehu* also has an oblong-shaped finger but the skin is smooth, and *Karat Kole*, which is more rare than the other *Karat*, has a round shaped finger.

Remember, "variety is the spice of life!" A variety of bananas can provide good taste and enjoyment, and also health benefits, including protection against diabetes, heart disease, certain cancers and vitamin A deficiency.

## Breadfruit: Symbol of Health

By SUSAN TATUM  
The Kaselehlie Press

KOLONIA, Pohnpei - If the wealthy eat imported foods then imported foods must be "better" foods, right? What chaos that idea has wrought to the health of Micronesians! The changes in our diets over the last 60 years have brought about so many health problems. Imported foods became symbols of wealth-but they are certainly not symbols of health.

Scientists are beginning to search for little known populations who continue to produce centenarians (people who live to be 100 years old or older). One such place is the island of Dominica in the Caribbean Ocean. Out of a population of 70,000, 21 Dominicans are more than 100 years old. One of those centenarians is Antonia

Fevrier, 104 years old! When asked what someone could do to live as long as she has, she said, "Eat lots of callaloo". Callaloo is a spinach-based soup common in the Caribbean. Deep green in color, with a taste described as "scrumptious", the soup is made from the leaves of a dasheen plant, seasoned with garlic and onions, and contains black pepper leaves together with crab, fish or salted meat.

Would nutrition scientists today recommend Antonia's callaloo soup? Absolutely! Spinach and black pepper leaves are incredibly rich in vitamins and minerals. Garlic and onions are beneficial in fighting disease. Fish is so good for us that it is recommended to be eaten a minimum of three times a week. All these ingredients are found here on

Pohnpei. Previous generations knew what foods were to be eaten to produce good health. That knowledge seems to have been lost.

Scientists are evaluating the nutrient content of Pacific Island food and it is of no surprise that local Micronesian foods are among the healthiest foods in the world. Previous generations of Micronesians, as well as Caribbeans, lived to be 100 years old. What did their diets consist of? Local food, of course! Let's elevate the local foods to the status that they deserve-they pack a wealth of health!

The following are two breadfruit recipes that we think you'll enjoy. Here's to your health.

### Breadfruit & Pork Stew

- 1/2 cup flour
- Salt to taste
- 1 lb pork
- 3 tbs cooking oil
- 1 large onion, chopped
- 1 cup dried breadfruit
- 1 cup pumpkin, chopped
- 2 cups green leafy vegetables

1. Soak breadfruit in water for 10 minutes
2. Mix flour and salt

3. Cut up meat into small bite-sized pieces. Add to the flour mixture, mixing until well coated.
  4. Heat cooking oil in a large pot. Add the coated meat and brown.
  5. When the meat is almost brown, add chopped onion. Stir occasionally until browned.
  6. Add water. Cover and cook until meat is tender, about 30 minutes.
  7. Add breadfruit (after it has been soaked), pumpkin, and green leafy vegetables.
  8. Cook for another 10 to 15 minutes. Serve hot.
- Serves 4 to 6 people. You can double this recipe to serve 8 to 12 people.

### Breadfruit & Fish Salad

- 2 cups cooked mature breadfruit
  - 1 cup cooked fresh fish or tinned fish
  - 2 hard boiled eggs, chopped
  - 1 cup finely sliced vegetables such as carrots, Chinese cabbage, cucumber, or tomato
  - 3 tbs onion, grated
1. Cut the cooked breadfruit into cubes
  2. Combine all of the ingredients
  3. Add salad dressing or lemon juice, if desired
- Serves 4 people. You can double this recipe to serve 8 people.

Bon appetite.

# HEALTH NOTES

## NEW FINDINGS: HIGH ZINC CONTENT IN GIANT SWAMP TARO - MWAHNG

Dr. Lois Englberger, University of Queensland Research Advisor.

Findings from the Food and Drug Administration Center (FDA) of the Nutrient Center of Analysis, Atlanta, Georgia, have just confirmed that four varieties of giant swamp taro grown in Fohnpei have high zinc content. Most rich food sources of zinc tend to be from protein-rich foods like seafood, meat, and eggs, so this is quite an unusual finding, a local plant source high in zinc!!

Zinc is a micronutrient needed for growth and protection against infection. Poor zinc status and zinc deficiency is related to serious growth complications and increased morbidity and mortality due to infections.

Dr. Lois Englberger, University of Queensland Research Advisor, collected the samples last December from Benson and Bernice Agriba, living in Palikir, which they maintain a good collection of giant swamp taro and are very familiar with the different varieties. Samples were first investigated for pro-vitamin A carotenoids, the substances converted to vitamin A in the body, and the varieties that have yellow-colored edible portion were found with high levels. Then it was decided to also analyze giant swamp taro for mineral content. Samples of two varieties were first analyzed for mineral content in October 2001, and there was high zinc content, filling the estimated dietary requirements in normal eating patterns. Then last December 2002, giant swamp taro samples were collected again, this time for four different varieties, in order to confirm the first laboratory analysis. Again, the lab found a high content of zinc.

Zinc absorption is made more complicated due to the interference of

phytate content in the food, which ties up the zinc. Namely taro has low content of phytate, although it is hoped that analyses may be carried out to confirm this.

The findings of the zinc content in the giant swamp taro are presented here, along with some comparisons of zinc content of other foods (note that one standard measuring cup of taro is about 250 g):

Mwahnng variety	Zinc mg/100g
Simihden	23.0
Mwahng medel	5.8
Xeral	5.4
Mwashei	4.8

\* (Findings of the FDA Nutrient Center of Analysis Laboratory February 2003)

Other foods	Zinc mg/100g
Chicken, drumstick	2.2
Tuna, canned	1.2
Egg, whole	0.9
White bread	0.7
Rice	0.6
Banana, cooking	0.1

(Data from the Pacific Islands Food Composition Tables, Secretariat of the Pacific Community, 1994)

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## Zinc In Taro

Letter to the Editor,

I would like to make a comment about the article printed in the Health Notes corner of the March 6-19 Kaselehlie Press, titled "New Findings-High Zinc Content in Giant Swamp Taro - Mwahng." One reader said to me that the title of this article was not clear to her, and that she was not sure whether it is good to have a taro high in zinc content or whether this is bad. I would like to confirm that it is good to have a high content of zinc in the taro, because zinc is a needed micronutrient and because there are not many plant foods that contain a lot of zinc.

As shown in the table printed with the article, animal foods such as fish and chicken, are good sources but these foods are not always available in large quantities. Zinc is especially important for growth and protection against infection.

Also there were a few omissions in the printing of the article, which we would like to provide here, i.e. the Chuukese names for the giant swamp taro cultivars. They are Simiten for Simihden, Manikoukou for Mwang medel, and Mwachei for Mwashei.

Thank you,

Dr. Lois Englberger, University of Queensland Research Advisor and Mr. Kipier Lippwe, FSM Department of Health, Education, and Social Affairs National Nutritionist

# NEWS

## Many Local Bananas are Vitamin A-rich

By *Dr. Lois Engleberger*  
The Kaselehlie Press

The *Karat* Banana is not the only local vitamin A-rich banana, there are 10 others identified so far. This is important because these bananas protect against vitamin A deficiency disorders and also diabetes, heart disease, and certain cancers.

Some of the bananas are rare like *Karat*, *Utin Yap*, and *Ihpali* (in Kosrae *Usr Kulass*, *Kolontol*, and *Usr Wac es Sie*), but there is one vitamin A-rich banana that is very common, *Taiwang*. This banana has a low status because it is so available and is often used for feeding the pigs but in Kosrae it is also valued for making the traditional *fafa* dish because it is very sweet and tasty.

The substances in plant foods that convert to vitamin A in the body are called carotenoids. Epidemiological research shows that carotenoid-rich foods protect against a number of chronic diseases, including diabetes, heart disease, and certain cancers. So these local carotenoid-rich foods provide double benefits, against vitamin A deficiency and chronic

diseases.

In 1998, the *Karat* banana was the first of the bananas in the Federated States of Micronesia to be analyzed. Then a series of analyses of 16 banana varieties were

analysed from the year 2000 to 2002 for different nutrients. All bananas were from Pohnpei and Kosrae, except one banana from Chuuk. The analyses were carried out at five laboratories, the Cancer Research Center of Hawaii, Honolulu, Hawaii; University of the South Pacific, Suva, Fiji; Roche Vitamins Ltd, Basel, Switzerland; Covance Laboratory, Madison,

Wisconsin; and Food and Drug Administration Atlanta Center of Nutrient Analysis, Atlanta, Georgia.

Yellow and orange coloration of the edible portion of the banana was very much related to the amount of carotenoid contained. Those banana varieties with a deeper yellow or orange coloration had a higher carotenoid content. For example, *Utin Yap* has the darkest coloration of all, and it had by far the highest carotenoid

content. This means that people in the community can use coloration of the banana flesh as a rough indicator of the carotenoid content.

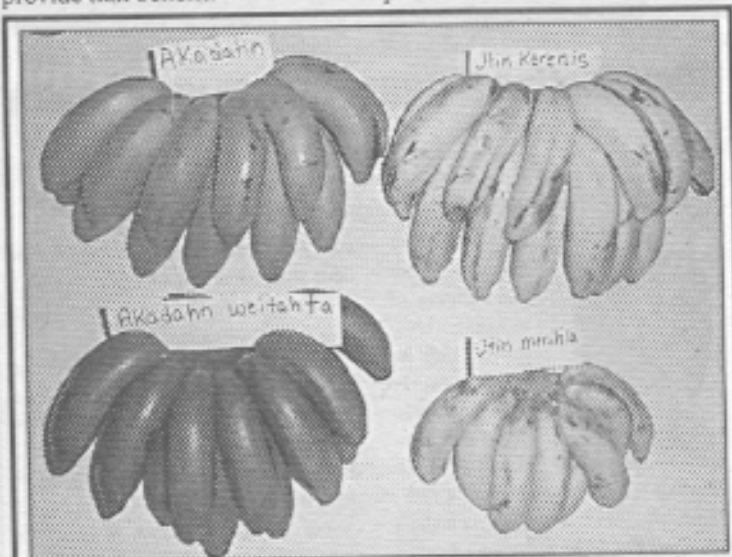
What about rice? How much of provitamin A carotenoid does it contain? Absolutely none, zero!!! Also wheat flour and rice contain no provitamin A carotenoid. All bananas (and other local foods like taro and breadfruit) contain at least some carotenoids, so all the local foods provide some protection against vitamin A deficiency, diabetes, heart disease, and cancer, whereas rice does not provide that benefit.

Diabetes particularly is an increasingly serious problem in the community. One report showed that over 90% of the surgical admissions in the Kosrae State Hospital were from diabetes-related complications. Vitamin A deficiency disorders include problems with vision and eye health, but also involve increased rates of many kinds of infections, particularly skin, respiratory, and diarrheal infections.

Thus, there is great potential in consuming many local vitamin A- and carotenoid-rich bananas for protecting against these health problems.



*Taiwang*



Bananas shown above protect against vitamin A deficiency disorders and also diabetes, heart disease, and certain cancers.