

Coconut

pacific food leaflet n° 4

ISSN 1018-0966



The coconut tree is the 'tree of life' or 'divine tree' of the Pacific Islands. Apart from its value as a food for humans and livestock, it provides wood for building, material for weaving, leaves for shelter and oil for cooking. When dried into copra, it is also an important source of income.

Varieties of coconut trees

The coconut tree, with its long trunk and crown of waving fronds, is a symbol of the Pacific. There are many varieties of coconut trees, for example 'talls', 'dwarfs' or hybrids between them. Tall varieties often live for 70 years or more. Many varieties have local names that refer to their main use or appearance.

Dwarf varieties flower about three to four years after planting and because they are low-bearing they are

easier to harvest. The tall varieties flower in about eight years. Some varieties have large nuts, while others have many small ones. Other differences include skin colour and the amount of milk and meat. One variety is known for its edible husk, which is chewed and sucked in the raw or cooked state.

Coconut trees bear nuts all year round. The nuts grow from flowers produced in the axils of the leaves. They are either harvested when they are young, or left to ripen and fall. It takes about a year after the tree flowers for the nut to mature. Coconuts are mature when the juice inside can be heard when the coconut is shaken.

There is a close connection between the health of the leaves and the number of coconuts. Taking good care of coconut trees and not removing too many leaves for other uses will generally result in more coconuts.



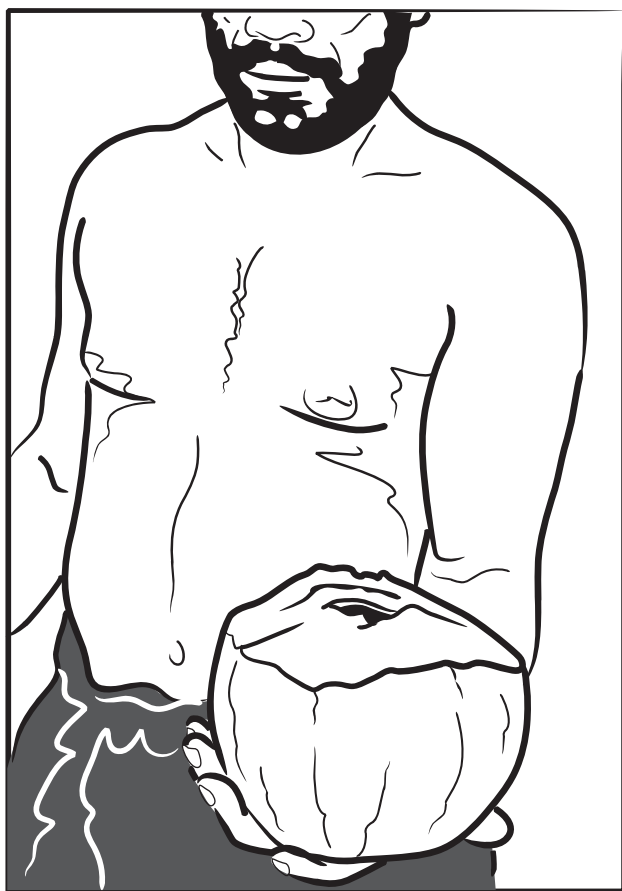
Coconut products

Food uses

Coconuts are eaten at different stages and in many different ways. Some of these are described below.

Immature (or drinking) coconut

These young nuts have either a green or orange outer surface. They contain large amounts of a clear sweet liquid called **coconut juice** or **coconut water**, which is used as a drink. The jelly-like white flesh inside the very young drinking coconut is called **immature flesh** or **coconut jelly**. It can be eaten as a snack or used in salads or other dishes. Older drinking coconuts have firmer white flesh. Various local terms are used to describe the flesh of drinking coconuts at different stages.



Mature coconut

These older coconuts have a brown outer surface. They contain a small amount of liquid called **mature coconut water**, which is only sometimes consumed. The mature coconut contains a thick layer of firm white flesh, which is called **mature flesh** or **meat** or sometimes **copra** (copra is the term used to describe the flesh when it is processed for sale). The flesh is



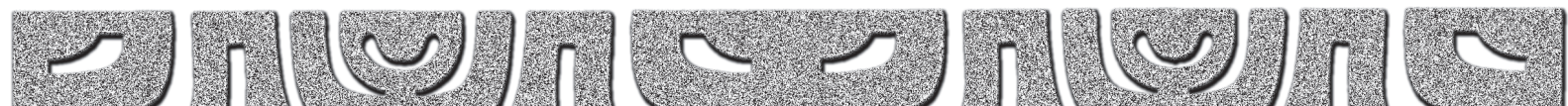
eaten as a snack or grated and used in cooking. The grated coconut is also squeezed to extract an emulsion called **coconut cream**. If water is added to help extract the liquid, a thinner liquid is produced, which is called **coconut milk** or **coconut cream, water added**. If made without adding water, it is called **coconut cream, no water added**. Coconut cream is used in many recipes.

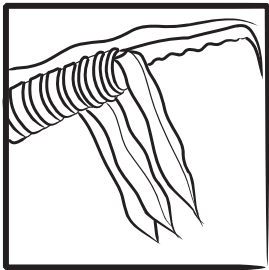
Coconut oil

Coconut oil is used in cooking and also as a body oil to which scents are added. It is prepared by gently boiling coconut cream until only the oil remains or by grating mature coconut, drying it in the sun, and using pressure to extract the oil.

Coconut toddy

Toddy is produced by binding and cutting a newly formed coconut bud. Paper-thin shavings are sliced off twice a day so that the dripping sap continues to flow. The sap (about half a litre per day) is then collected in either a specially prepared coconut shell or bottle, which must be kept very clean. The fluid may be drunk fresh, cold or heated. If concentrated by boiling it down, it becomes a syrup called **toddy**. It can also be fermented to make an alcoholic drink or vinegar. Fresh toddy is an excellent drink for both infants and older children. For infants, it can be used to complement breastmilk after six months of age.





MAKING COCONUT TODDY

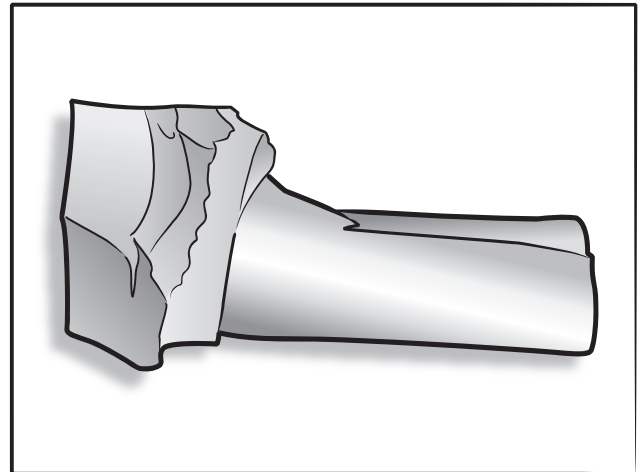
Sprouted coconut

When a coconut begins to sprout or germinate, it is called **sprouting** or **germinating coconut**. A spongy, sweet, white mass of tissue forms inside the seed cavity and is referred to as the **coconut apple**. It absorbs the **endosperm** or **embryo**, also called the **meat**. The **coconut apple** can be eaten raw as a snack, or cut up or mashed for use in different recipes.



Heart of palm

The heart of palm is the central area of the palm (2–3 kg/palm) that the leaves and flowers grow from. Because removing it will kill the tree, it is only eaten rarely as coconut palms are so precious. It is eaten as a snack or made into a salad, sometimes called ‘millionaire’s salad’.



Husk

The husk of some coconut varieties is eaten, especially on some atolls. It is very sweet and is chewed for its juices, similar to chewing sugar cane. On some islands in Micronesia, people believe that eating this husk helps people recover more quickly from an illness.

Fermented ripe nuts

These nuts have tough flesh, which is sour and oily. People who eat them enjoy the special flavour.

Non-food uses

Coconut products are used by people around the world. Oil pressed from copra is used in soaps, cosmetics and hair oil. The fibres from coconut husks are used to make mats, mattresses and rope. Coconut shells are used for utensils, cups, bowls, bottles, lamps, buckles and ornaments. Coconut leaves are used for making mats, baskets, hats, brooms, fans and thatching. Palm mid-ribs are used to make fences, walls, tongs, toys and whistles. The trunk contains a very hard wood that is excellent for furniture and fence posts. Charcoal is made from any waste trunks or shells and the husks are used for firewood and to make cocopeat for potting mix.



Nutrition

Coconut products differ in their nutrient content. Coconut oil is almost 100% fat with no carbohydrate, whereas boiled coconut toddy is almost half carbohydrate with almost no fat. As it matures, the flesh of the coconut becomes higher in fat and energy.

Coconut oil, mature coconut meat and coconut cream are all high in energy (calories). A small amount of coconut cream added to local root crops and starchy fruits makes a good energy food for young infants (after six months of age). The soft flesh of a young drinking coconut is also a suitable food for infants and children.

Coconut toddy is an excellent source of vitamin C, which is important for fighting infection and also

helps the body absorb some forms of iron. One cup of fresh toddy provides more than the estimated daily requirement of vitamin C for most adults (45 milligrams). Coconut juice, sprouted coconut, and the flesh of immature and mature nuts are also good sources of vitamin C.

Some coconut products are also a good source of iron, which is needed for building strong blood.

Many coconut products contain niacin, riboflavin, and thiamine (essential B vitamins), which are important for body metabolism.

The drinking coconut contains a refreshing nutrient-rich liquid. The juice can also be given to people with diarrhoea to replace lost fluids and minerals. Soft drinks contain few nutrients (see table) and may be harmful to health because they often contain a large amount of refined sugar.

Comparison of 100 gram (g) edible portions of coconut products, processed baby food and soft drink.

Food item	Kcal*	Protein (g)	Fat (g)	CHO (g)	Fibre (g)	Calcium (mg)	Iron (mg)	Niacin (mg)	Vitamin C (mg)
Sprouting coconut ¹	74	1.3	3.6	8.5	1.8	19	0.7	0.9	6
Coconut flesh, mature ¹	283	3.0	27.4	3.6	7.6	10	1.0	0.6	7
Coconut flesh, immature ¹	81	1.8	5.9	3.8	3.2	2	1.3	3.6	3.8
Coconut cream, fresh, no water ¹	325	4.4	32.3	4.7	1.7	15	1.8	0.5	1.0
Coconut water/juice, immature nut ¹	16	0.1	0	3.9	0	12	trace	2.8	1.4
Coconut water, mature nut ¹	22	0.3	0.2	4.9	0	29	0.1	0.1	2
Coconut toddy, fresh	42	0.2	0.4	9.6	0	trace	trace	0.2	20
Coconut toddy, boiled ²	217	0.9	2.1	49.4	0	trace	trace	trace	**
Coconut oil	883	trace	99.9	0	0	2	trace	trace	0
Baby food, apple and apricot ¹	45	0.2	0.2	9.8	1.8	6	0.3	0.1	18.0
Soft drink, cola ¹	43	0	0	10.9	0	trace	0	0	0

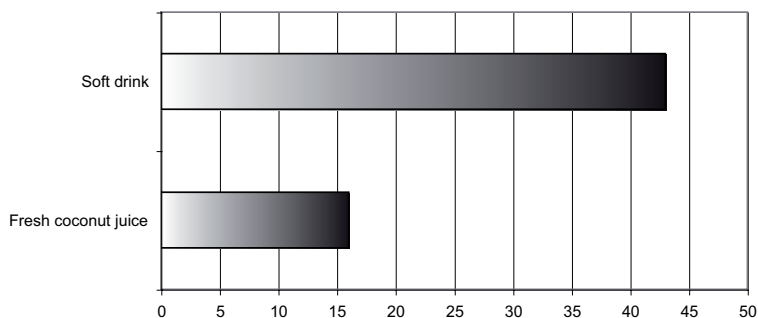
¹Dignan et al. 2004; ²Murai et al. 1958; na = not available.

*Energy expressed as kilocalories





Energy (kcal/100g)



**Available information may not be accurate.

Fat content of coconut

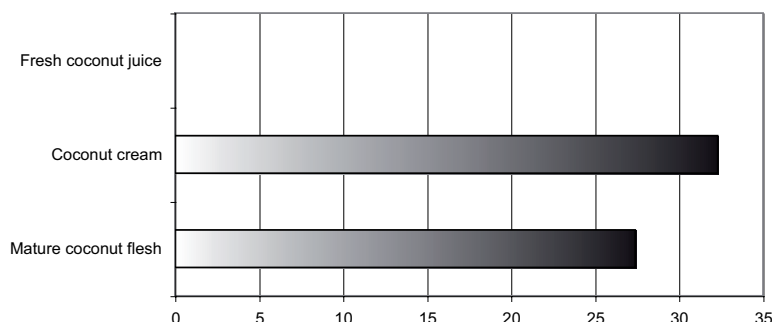
Fats are molecules made of building blocks called fatty acids. These are classified using two methods: (1) saturation and (2) molecular size. According to the first method, there are two basic types of fatty acids: saturated and unsaturated. The unsaturated fatty acid group includes monounsaturated and polyunsaturated fatty acids. The second classification method, molecular size, refers to the length of the carbon chain. There are long-chain, medium-chain and short-chain fatty acids.

All fats and oils consumed by humans are mixtures of saturated and unsaturated fatty acids with different chain lengths. These groupings are important because they pose different health risks. In particular, there is strong evidence of a link between a high intake of saturated fat and heart disease. In general, animal fats (found in meat, milk, cheese and eggs) contain more saturated fats. Coconut also contains high levels of saturated fats.

However, coconut oil is very different from other fats because it mainly consists of medium-chain fatty acids or medium-chain triglycerides (MCTs), which are also found in human breastmilk. These may have health-giving properties; for example, protection against heart disease. Most natural fats are made up of long-chain fatty acids.

Studies have shown that a high intake of coconut is not linked with a risk of heart disease within a traditional lifestyle that includes enough physical activity, a diet with plenty of fish, root crops, starchy fruits and vegetables, low salt intake and minimal use of tobacco and alcohol. However, consuming too much fat from any source carries health risks.

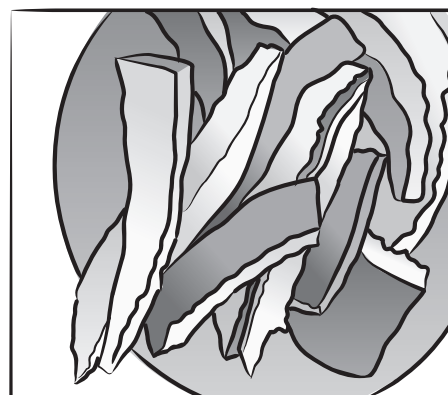
Fat content (g per 100g)



Preservation

Coconut cream can be frozen or canned. Both **mature** and **immature coconut flesh** can be frozen by packing it tightly in plastic bags before freezing. Another way of preserving coconut is to dry grated coconut in a very slow oven or to sun-dry it as described below.

Toddy can be used to make many food products. When fresh toddy is allowed to ferment, the **yeast** that develops can be used to make bread. **Vinegar** can be made by leaving fresh toddy to ferment to an acid stage. **Palm syrup** is made by boiling toddy until it is thick. It can then be mixed with four parts water to one part palm syrup to make a sweet drink. Palm syrup is also used in traditional recipes for sweetening.



Dried grated coconut

1. Grate the flesh of a mature coconut.
2. Spread the grated coconut on a tray and put it in the sun to dry.
3. Dry it for 2 to 3 days, stirring it regularly so that it dries evenly.
4. It is ready when it feels dry. Dried grated coconut will keep for several weeks if stored in a dry place. It can be used for baking or in fruit salads.



Recipes

Coconut husk snack (*Aprior* from Pingelap, Pohnpei, Federated States of Micronesia)

- 1 husk of a coconut variety with edible husks
 - 1 coconut, grated
1. Remove the outside skin of the coconut.
 2. Separate the coconut husk into bite-size pieces.
 3. Put 1–2 tablespoons of grated coconut into each piece of coconut husk.
 4. Wrap up and tie off each bite-size piece of filled husk.
 5. Chew the pieces, sucking the husk.

Sprouted and drinking coconut salad

(*Dalok* from Pingelap)

- 2 sprouted coconuts
- Juice of 2 drinking coconuts
- Soft flesh of 2 drinking coconuts

1. Remove the embryo inside the sprouted coconut and place it in a bowl or plastic container.
2. Add the coconut juice.
3. Spoon out the soft flesh of the young coconut and add to the embryo and coconut juice.

Note: Some people add sugar and condensed milk. However, it is best to avoid these sweet foods because excessive refined sugar is not good for the health.

Fish in coconut cream

One serving

- 2 tablespoons canned or fresh fish (cooked)
- 4 tablespoons taro, cooked and mashed
- 4 tablespoons taro leaves, cooked and mashed, optional
- 4 tablespoons thick coconut cream

1. Mix all ingredients together.
2. Cook the mixture for 5 minutes in a pot.
3. Cool and serve.

Note: This dish can also be used as an infant food from six months of age.

Pumpkin pudding

Six servings

- 6 medium drinking coconuts with good flesh inside
- 3 cups pumpkin, peeled and cut into pieces

1. Cut the tops off the coconuts. Pour the coconut water into a bowl.
2. Put the pumpkin pieces in the coconut shells and pour the coconut water over the pumpkin.
3. Bake in an earth oven or other oven at a moderate temperature (180°C or 350°F) for about 1 hour.
4. Cool and serve.

Green coconut drink

Ten servings

- 6 drinking coconuts
- 4 lemon leaves

1. Halve the green coconuts.
2. Pour the coconut water into a bowl, saving the shells.
3. Scoop the flesh out of the coconuts into the bowl and mix with the coconut water. Prepare the fibre from the inside of a coconut palm mid-rib to whip the mixture. Cut the fibres very thin (because they are stiff, they act like a blender to cut the coconut flesh). Whip the water and flesh until the flesh is cut into small pieces.
4. Put the mixture in a pot and bring to the boil. Add the lemon leaves and then simmer gently for 15 minutes.
5. Serve hot or cold, using the coconut shells as a cup.

Note: This is an excellent drink for breastfeeding mothers and for babies and children after the age of six months.



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