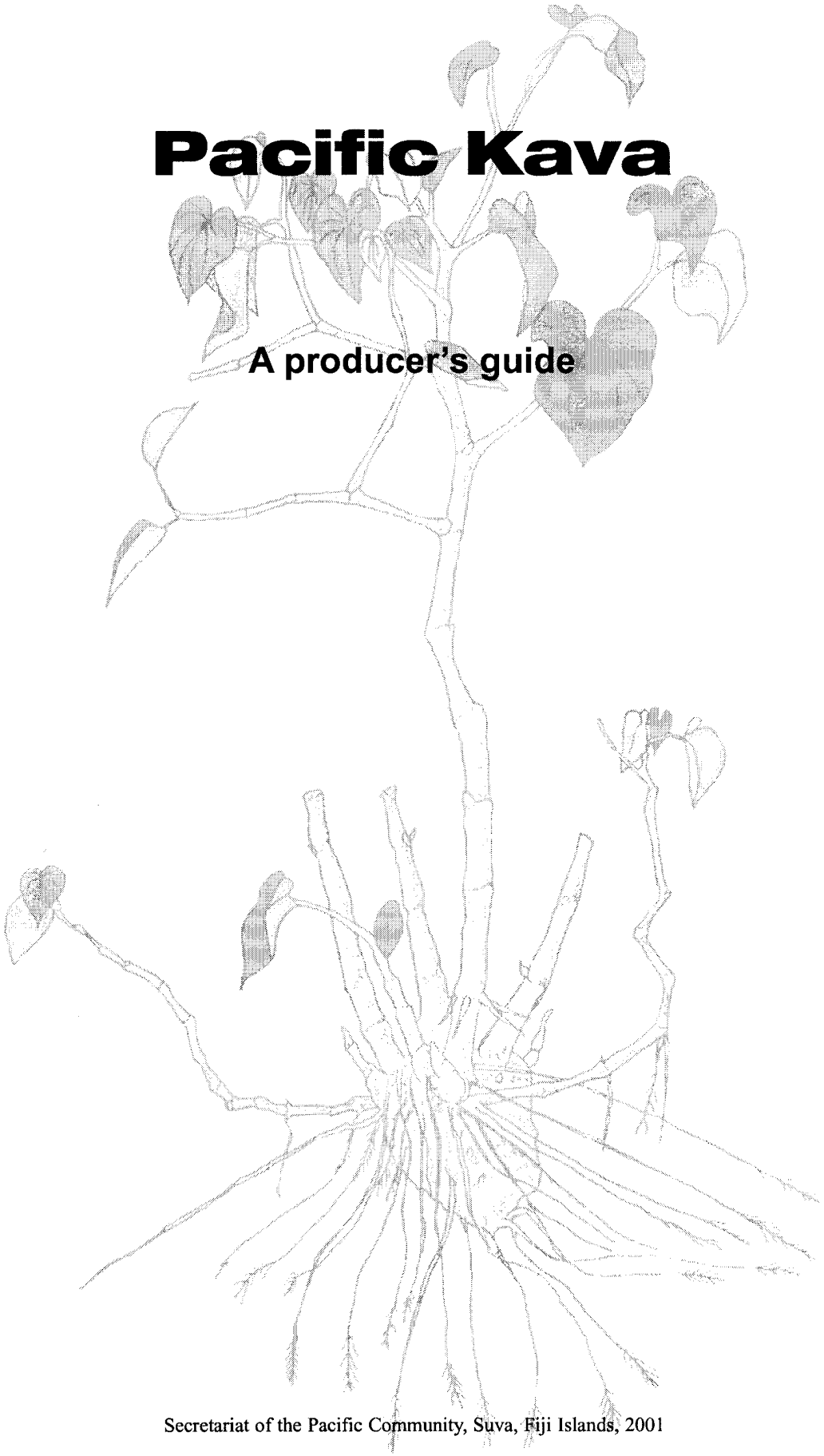
Pacific Kava

A producer's guide



Secretariat of the Pacific Community, Suva, Fiji Islands, 2001

E. Commercial parts of the kava plant

There are five commercial products from the kava plant: basal stems, chips of the rootstock, roots, peeling of the rootstock and residues. The kavalactone content of each part of the plant is quite different. (There may have been some confusion in the past between the peelings of the rootstock, which are high in kavalactones, and peelings of the basal stem, which are low in kavalactones.) The five commercial products and approximate kavalactone ranges are:

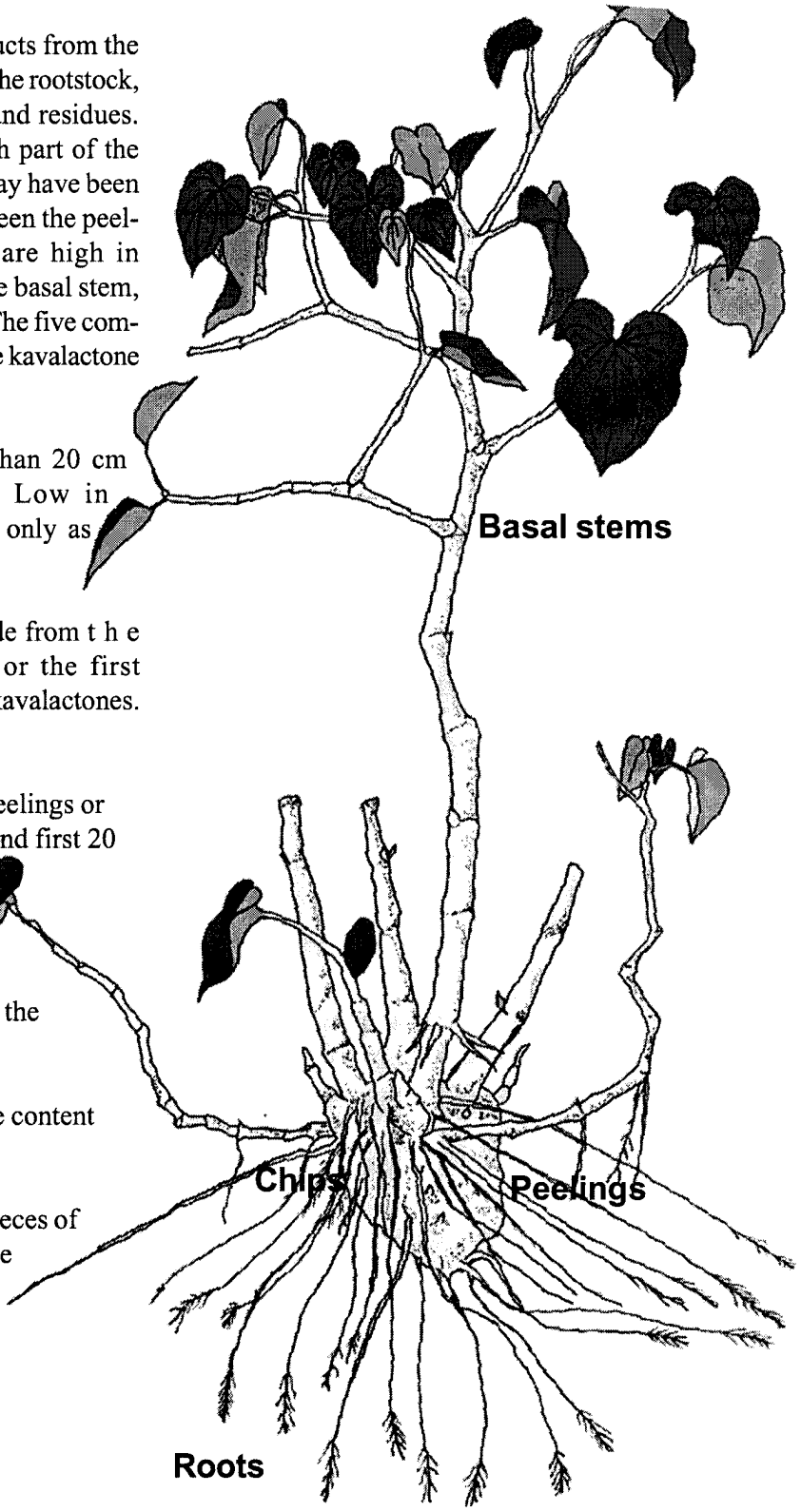
Basal Stems: stems more than 20 cm (8 in) above the rootstock. Low in kavalactones (3–5%) and used only as planting material.

Chips of the rootstock: made from t h e peeled rhizome or rootstock or the first 20 cm (8 in) of the stems; 3–8% kavalactones. Used for drinking.

Peelings of the rootstock: peelings or skin of the rhizomes/rootstock and first 20 cm (8 in) of the stems. It has been preferred for export because of its high kavalactone content (7–11%). Used for drinking and the pharmaceutical market.

Roots: very high kavalactone content (8–16%).

Residues: the mixed small pieces of the other commercial parts of the kava plant of variable kavalactone content. Used for drinking.



F. Kavalactones

Fifteen kavalactones have been isolated from kava. Each kavalactone has a different physiological effect.They are divided into the major kavalactones and minor kavalactones. The six major kavalactones account for 96% of the fat soluble extract from kava and are considered to be the most important active ingredience. They are: demethoxy-yangonin, dihydrokavain, yangonin, kavain, dihydromethysticin, and methysticin. Kavain, for example, is rapidly absorbed by the body and quickly creates a feeling of relaxation. Dihydromethstysticin and dihydrokavain are very potent and produce nausea and long-term drowsiness. These two kavalactones are found in high concentrations in the famous 'tudei' kava cultivar of Vanuatu, which is known to make the drinker feel drunk for two days. For more details of the different effects of each kavalactone read the research by Lebot (see biblography).

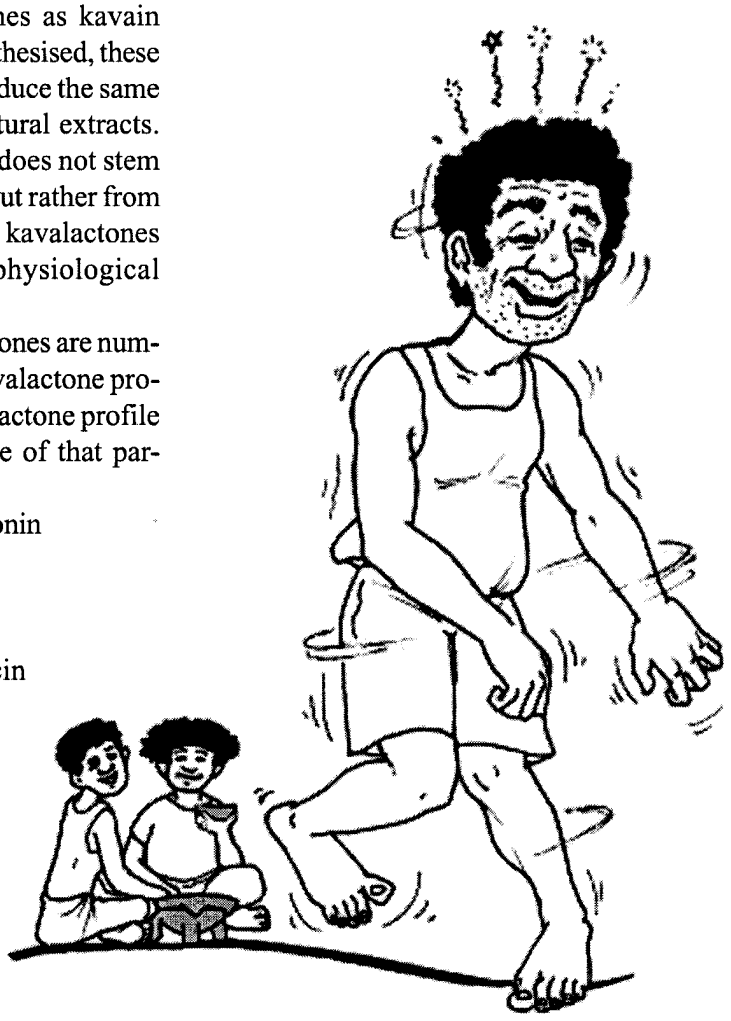
Although such kavalactones as kavain and methysticin can now be synthesised, these artificial kavalactones do not induce the same physiological effects as the natural extracts. The efficacy of kava evidently does not stem from a single active substance but rather from a mixture, a blending of several kavalactones that results in a synergistic physiological effect.

Chemotypes: The kavalactones are numbered and used to define the kavalactone profile of kava cultivars. The kavalactone profile is referred to as the chemotype of that particular kava cultivar.

1 = demethoxy-yangonin
2 = dihydrokavain
3 = yangonin
4 = kavain
5 = dihydromethysticin
6 = methysticin

The chemotype of a kava cultivar is defined by listing, in decreasing order, the proportion of the six major kavalactones. Normally the first three kavalactones in the code for the chemoptype represent over 70% of the total kavalactone content. Consequently buyers and producers pay attention to the first three kavalactones of the chemotype. For example two popular chemotypes in Vanuatu are 246531 and 426135, both of which have dihydrokavain, kavain and meththysticin as the first three kavalactones.

The chemotype of a kava cultivar may not be important for the local drink market. However there is interest by the pharmaceutical industry in Europe to buy only kava with certain chemotypes. Hawaii, in the development of its kava industry, is increasingly cultivating the preferred chemotypes. In the future most kava producers and international



H. Quality specifications

The quality of an agricultural product is always an important issue. In the world of international trade, sellers and buyers rely on quality specifications to facilitate the trading of products. A quality specification is a pre-sale agreement on the quality of the product which is to be traded. Quality specifications exist for most internationally traded products. An essential part of quality monitoring is taking representative samples of consignments and testing of samples. The quality specifications are enforced by the industry and/or by legislation and licensing of exporters.

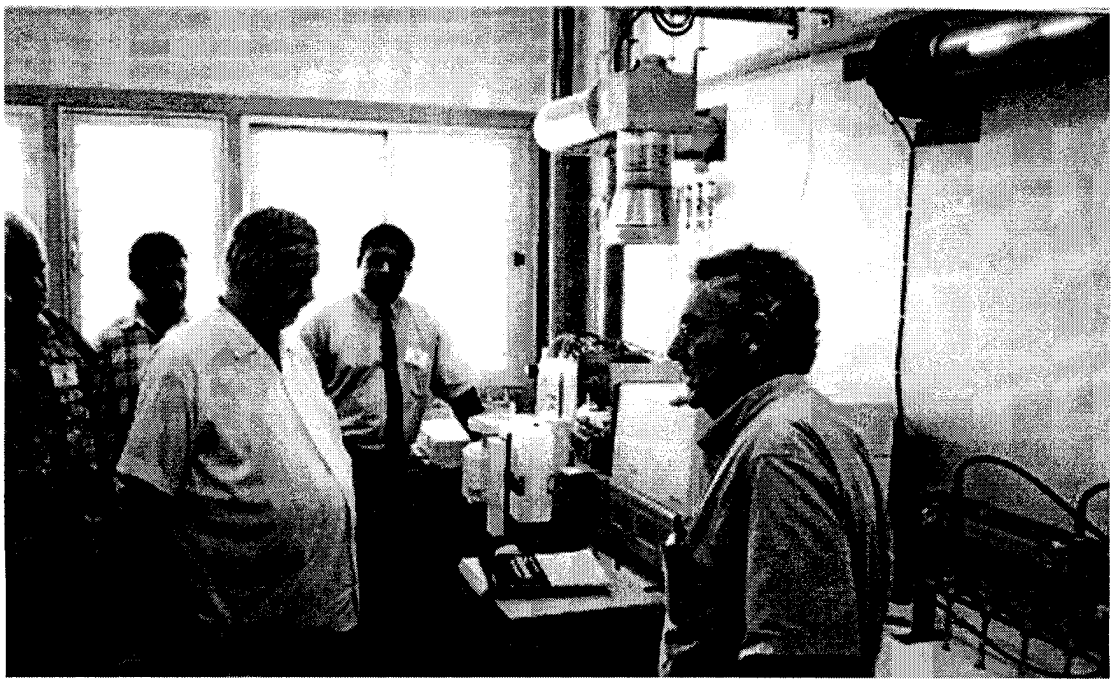
There is no established physical or chemical quality specification for kava exported to the pharmaceutical industry. The result has been that buyers and importers have experienced problems and possible rejection of exported kava when there are quality-related problems.

Kava has been traded for many years both domestically and between islands of the Pacific without a quality specification. Instead the quality is based on the buyer examining the kava before purchasing it. The farmers and middlemen who sell the kava have learnt through experience the factors kava buyers and exporters are looking for so that they can get the best price. But there have always been problems and the farmer, the middlemen and the buyers have all suffered.

More recently, developed countries have become involved in the international trade of kava. Furthermore, more advanced analytical techniques have been introduced which have led to the introduction of detailed, indisputable quality specifications for kavalactones

As we get to know more about the chemical make-up of kava, we have been able to develop a set of quality specifications (standards) which can be checked and verified anywhere in the world.

The establishment and use of a quality specification for kava can protect Pacific Island kava producers and traders in the event of a dispute over quality. SPC funded the Institute of Applied Sciences of the University of the South Pacific in 1995 to develop a draft quality specification for kava. These specifications are explained in the following pages.



The kavalactone analysis in a laboratory at the University of the South Pacific.

Background information on quality specifications

This is an explanation of each of the factors that are normally included in the quality standards of a commodity. They include: physical and chemical characteristics for kava.

Description

The offical description for a quality specification normally contains the botanical name and a brief description of the product. Thus adulteration means that the product does not conform to the specification and the purchaser may reject the consignment. It can be difficult to visually detect adulteration but there are tests that can detect when other vegetable matter has been added. Adulteration has been common in the food industry and a number of instances have been reported in which kava has been adulterated with 'spent' (used) kava and other matter.

Physical properties

A series of simple physical tests can give a quick, easy assessment of quality. For instance, because the appearance of kava is well known, discoloration, insect fragments, tobacco, stones and other vegetable matter can be easily detected. Kava aroma is also well known and common contaminants such as diesel, petrol or spices can be detected very quickly by simply smelling the kava. A lack of aroma may indicate staleness.

Flavour

This can be tested informally by simply preparing a solution and assessing it. A taste panel can score the flavour using a previously acceptable product for comparison. In so doing, very small differences can be assessed and the flavour profiles can be assessed objectively. Taste panels in which as many as 20 panellists assess flavour, appearance, and aroma can be used for dispute resolution.

Filth

Soil adhering to the product can be removed and measured. Soil contains a very large number of bacteria and unfairly adds to the weight of the kava. It is important to remove as much soil as possible from the kava to ensure that the bacterial level is as low as possible and to ensure that the purchaser does not in effect pay for soil.

Moisture

The keeping quality of vegetable matter depends to a large degree on the moisture content. Reducing the moisture content below 12% is essential. Above this figure the kava is likely to become mouldy. If the roots break when bent that is a good indication of low moisture content. There are also oven-drying techniques used in the laboratory to determine moisture content.

Chemical characteristics

Ash

Ash testing is one of the 'indicator tests'. It gives a guide to other characteristics such as age, cleanliness, moisture content and contamination with other plant material. The test is inexpensive and simple and is a means of verifying other tests.

Kavalactones

The most important the characteristic of kava for international buyers is the kavalactone content. Six kavalactones are tested for each part of the plant. Experience indicates that for the root and rootstock, the range of values obtained for each kavalactone is fairly narrow. Values falling outside these accepted values may indicate blending with other less valuable parts of the plant, blending with 'kosa' or previously used kava residues or contamination with other plant material. Furthermore, values outside these ranges would indicate that the kava is not of export quality.

Proposed kava quality specifications

These are the draft physical and chemical quality specifications based on research at the Institute of Applied Sciences of the University of the South Pacific.

Description

Kava will be the roots, rootstock, basal stems or scrapings derived from the plant *Piper methysticum*. It will be sound, clean and substantially free from filth, soil and other contaminants.

It will be prepared in accordance with good manufacturing practice and will not contain vegetable matter derived from other species, insect fragments, or any other extraneous matter. It will have the following physical and chemical properties.

Physical characteristics

Colour

Kava will have a characteristic light brown/grey colour.

Aroma

Kava will have the aroma characteristics of the product. The aroma will be free of extraneous aromas indicating contamination with other plant material, solvents or other volatile matter.

Flavour

In the event of dispute, kava samples will be subject to a taste panel assessment using the triangular taste test. There will be at least 20 panellists and results will be subjected to statistical analysis. Statistically significant samples will be treated as contaminated.

Filth

Using standard methods heavy filth will not exceed 0.63% on a dry weight basis. Heavy filth exceeding 0.63% but less than 0.7% will be considered to be second grade. Heavy filth exceeding 0.7% will be rewashed and redried.

Moisture

The moisture content will not exceed 12.54% when dried to constant weight at 105°C. Moisture content exceeding 12.54% but less than 12.88% will be considered to be second grade kava. Kava samples with a moisture content in excess of 12.88% will be redried.

Chemical Characteristics

Ash

The ash content will not exceed 5.36% when organic matter is removed at 440°C. Samples exceeding 5.36% but less than 5.93% will be considered to be second grade kava. Samples with an ash content in excess of 5.93% will be washed and redried.

Kavalactones

A quality specification for kavalactone content is still under development and it is very difficult to specify because of the great variations between kava varieties. The important point, especially if large consignments are involved, is the need for both buyer and seller to test the kavalactone content. Once the results are available prices can be accurately negotiated.