

# Kava

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## About kava

Kava (*Piper methysticum* Forst. f. 'intoxicating pepper') is known in different parts of the world by different names such as 'kawa pfeffer' or 'rauschpfeffer' (German), 'kawa' (French), 'yaqona' (Fiji), 'kawa' or 'kava kava' (Polynesia), 'sakau' (Micronesia), 'wati' and 'tigwa' (New Guinea), for example.<sup>1,2</sup>

## What is kava?

Kava is both a plant and a beverage made from the rootstock of the plant.

'Kava' the plant is really a sterile group of cultivars of the wild *Piper wichmannii* from New Guinea, the Solomon Islands and Vanuatu. It is an achievement in plant breeding of rural, tropical gardeners who searched for and domesticated it in northern Vanuatu about 2500-3000 years ago. Ni-Vanuatu and other Pacific peoples continue to refine it today. From Vanuatu it went into the Pacific with the forerunners of the modern Polynesians.<sup>1</sup> Today, the plant and the beverage are both pivotal to the economy, society and ritual traditions<sup>3</sup> of several Pacific island societies and nations.

'Kava' the beverage is widely consumed for its conscious-altering, hypnotic and muscle-relaxant properties. It is a soporific brew with anxiolytic and mild anaesthetic, sedative and analgesic effects.<sup>2</sup>

## Kava in the natural therapies industry

Using materials imported from Pacific countries, kava is manufactured into preparations of dried root, tablets or liquid extract for internal and external use or as an ingredient in ointments and creams, and marketed with a plethora of trade names. Kava-based products have recently been promoted as natural alternatives to anti-anxiety drugs and sleeping pills in Europe, North America and Australia.<sup>1,4</sup> You can even buy kava and related products, now referred to as a 'world drug', over the Internet.

## Kava's key constituents

'Kava pyrones' are fat-soluble pyrones also known as 'kava lactones'. There are six main ones: kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and desmethoxy-yangonin.<sup>2</sup> Total lactone content of dried kava powder may be 10-15% (average 12.5%) of dry weight, depending on the ecological conditions of plant growth and the plant parts used to manufacture the powder. In fresh kava, lactone content is around 2-3% of total weight.<sup>1</sup>

### **Mood-altering qualities**

Mood-altering effects of kava have been variously described. They begin with numbness in the mouth and throat that soon progresses to the limbs with an overall sense of relaxation and wellbeing. With higher doses loss of motor control and sleep induction occurs.<sup>11</sup> These effects were thought to be superior to those of alcohol by the people who decided to bring kava into their communities in Arnhem Land after visits to Fiji in the early 1980s.<sup>12</sup> Kava was regarded as a possible challenge to the violence and social disruption associated with alcohol in remote communities.<sup>13</sup>

### **Other effects**

Sedative and hypnotic activity occurs, an effect that is greater with kava resin (comprising the full suite of lactones) rather than with any one of the lactones in isolation.<sup>2</sup>

Kava lactones act to alter neuronal excitation by direct interaction with voltage-dependent ion channels and also enhance the binding capacity of GABA-A receptor binding sites in some parts of the brain.<sup>14</sup>

Sleep may be promoted by actions on the limbic system through modulation of emotional processes; deep sleep phase is lengthened with shorter wakeful phases.<sup>10</sup> Anxiolytic activity without sedation.<sup>15</sup> Relaxation of skeletal muscle and anticonvulsant activity.<sup>2</sup> Local anaesthetic and analgesic.<sup>2</sup>

Potentiates acute effects of alcohol and possibly other drugs active on the central nervous system.<sup>16</sup>

A dry, scaly skin rash (kava dermatopathy) is a well-known effect of excessive and chronic use but which regresses if kava intake is ceased or reduced, possibly related to disruptions in lipid metabolism in kava users.<sup>17</sup>

Adverse economic effects in small communities.<sup>5</sup>

### **Overdose**

There is no evidence available of overdose but, with prolonged use, the characteristic skin rash may occur. Toxicity is low; LD<sub>50</sub> for a standardised kava extract administered orally in rats was 16 g/kg and in mice 1.8 g/kg. Kava did not produce physiological tolerance in mice after seven weeks of daily exposure to minimally effective doses.<sup>10</sup>

### **Other possible effects**

Heavy doses of alcohol potentiate kava's hypnotic, sedative and toxic effects.<sup>16</sup> In the United States recently an otherwise healthy man suffered reversible coma after taking benzodiazepine in combination with the recommended dose of a natural therapy that contained kava.<sup>18</sup> One isolated case of 'fitting' (featuring choreiform movements) with prolonged and heavy use has been reported in eastern Arnhem Land.<sup>19</sup> Unpublished data suggest that similar unusual episodes have occurred in Arnhem Land communities associated with heavy kava consumption. These have led to presentations to the community clinic, but which did not require hospital admission.

It has been suggested that those driving vehicles and machinery, and pregnant or lactating women, should not use kava, but there have been no systematic studies carried out.

### **Kava's legal status in Australia**

The Commonwealth Therapeutic Goods Administration monitors the importation of kava into Australia, and importers require a licence to do so. In one state, Western Australia, the sale and supply of kava was restricted in 1988 under S.22 of the WA Poisons Act, but allows Pacific Islanders and others to seek permission from the relevant minister to possess kava for traditional purposes.<sup>5</sup>

Considerable effort has been made in the NT to manage the supply and consumption of kava in Top End Aboriginal communities. With bipartisan support, the NT Government has tried twice. The first legislative attempt was in 1990 under provisions of the Consumer Protection Act<sup>5</sup>, the second in 1998 under the Kava Management Act.<sup>6</sup> The explicit objectives of the more recent legislation include harm minimisation and to encourage 'responsible' kava use under a licensing system to be implemented in late 2001 or early in 2002. The new system was not in place at the time of writing (December 2001). A fundamental requirement of the proposed system is that the supply of kava must be in accordance with a licence, and possession and consumption of kava will be permitted only in designated licensed areas.<sup>7</sup>

### **Traditional views of its use and effects**

Kava's ceremonial and religious role in Pacific Island societies is well known. Over more than 50 years of research students of these societies have described kava being used in rituals to enable contact with supernatural beings.

Kava has been widely used for medicinal purposes in the Pacific.<sup>4,9</sup> And it has also been used in Western herbal medicine since the nineteenth century, recommended for treatment of a variety of ailments, mainly employing its mild analgesic properties.<sup>10</sup> Kava is not used for medicinal purposes by Arnhem Land Aboriginal people.

### **Two cross-sectional studies in Arnhem Land Aboriginal populations**

Two cross-sectional surveys of health effects of kava use in Arnhem Land have been conducted. In one community in eastern Arnhem Land a study was conducted in March 2000, and its results have been submitted for publication. After adjusting for alcohol use and sex, kava users more frequently showed dermopathy characteristic of heavy use, skin disorders (tinea and sores) and a lower body mass index. They had increased levels of liver enzymes (GGT and ALP) and blood lymphocytes were decreased. No evidence of proteinuria was found. Kava users and non-users were functionally equivalent on neurocognitive tests. Liver enzymes return to normal upon ceasing or reducing consumption, as was found in previous studies.<sup>20</sup>

Results of an earlier pilot survey in 1987, also conducted in an eastern Arnhem Land community<sup>21</sup>, had suggested similar health burdens for kava users. 'Heavy' kava use was associated with scaly skin and 'very heavy' users were more likely to be underweight and to have signs of liver damage (elevated GGT). Kava users showed changes in their blood, suggesting possible increased risk of infections (decreased lymphocytes) and kidney disease (proteinuria and haematuria) as well as changed responses to simple neurological tests.<sup>21</sup>

The result of reversible changes in liver enzymes in Aboriginal populations stands in contrast to a recent case of fulminant liver failure reported in Europe that was associated with use of an extract of kava over a few months for anxiety treatment.<sup>22</sup> While there is currently no evidence for long-term liver damage in regular kava users in Arnhem Land, this requires further assessment over longer periods, particularly in heavy users.

### **Case-control studies**

Studies of the risk amongst kava users of ischaemic heart disease (IHD) and pneumonia in eastern Arnhem Land have been conducted, and their results are being prepared for publication. A tendency (not statistically significant) for an association with IHD amongst kava users and an association with multiple admissions for IHD, as well as a tendency for an association with pneumonia, suggests that kava's effects should continue to be monitored closely. However, we

cannot confidently assert that kava consumption alone is a risk factor for IHD or pneumonia in this population.

### **Other studies**

Kava is recognised as a risk factor for melioidosis in the Top End of the NT.<sup>23</sup>

Kava has also been implicated in sudden cardiac deaths, particularly amongst Aboriginal sportsmen.<sup>24</sup> Kava's diuretic properties would make it plausible that those with established IHD, in particular, would be at higher risk of cardiac events if they performed heavy exercise while dehydrated. Also, it is plausible that people with abnormal cardiac output or effective mechanical performance, especially with heavy exercise, may be at higher risk of arrhythmia or abnormal atrioventricular function given kava's well-known muscle-relaxing effects.

### **Kava drinking in Arnhem Land**

The beverage has been (since 1982) enthusiastically consumed by some local residents in a number of Aboriginal communities in Arnhem Land, and it continues to be used today despite legislation.<sup>8</sup> The name 'kava' is used in Arnhem Land, but local people also know the Fijian name 'yaqona' and the grades of Fijian kava 'waka' and 'lewena' that are derived from the lower and upper rootstock of the plant respectively. Kava, the plant, is not grown by Arnhem Land Aboriginal people.

The preferred method of drinking kava in Arnhem Land is an infusion of dried powdered kava in water, preferably chilled. Kava's psychoactive components, the kava lactones, are mostly suspended in the infusion with smaller amounts in solution. Cups of, usually, about 100 ml are taken. The effectiveness of lactone extraction in a brew of kava with water is not standard. It is subject to social-contextual as well as physical variations in the mixture. The efficiency of extraction of these active constituents in infusions of kava powder in water is around 80%. Aboriginal people in Arnhem Land tend to consume kava at a steady tempo, consuming on average 37 g of kava powder containing around 3800 mg of kava lactones in 670 ml of water in an hour. Heaviest kava users have been known to consume as much as 900 g of kava powder, equivalent to perhaps 93 000 mg of lactones in a week.<sup>8</sup>

### **Prevalence of kava use in Arnhem Land**

The large numbers of people spending significant amounts of time drinking kava has attracted official scrutiny since the early years of kava use in Arnhem Land. Recent estimates of the crude prevalence in kava-using communities in the region in 1994-97 were 53% (67% males and 35% females) amongst people over the age of 15 years (Clough, A et al.<sup>25</sup>, paper submitted for review). A prevalence of current (within the previous month) kava use in 2000 in one community of around 33% (44% males and 10% females) is lower than these earlier estimates and suggests a possible decline in the prevalence of kava use since the Kava Management Act 1998. More recent data is not available to be conclusive about these changes.

Earlier studies carried out in 1985 and 1987<sup>26</sup> found that more (71%) males than females (20%) in the same age group across Arnhem Land drank kava. Studies in single communities showed that at about the same time from 56% to 66% of the population were using it.<sup>8</sup> Various studies have consistently reported a greater proportion of males (from 53% to 71%) than females (from 6% to 51%) using kava.<sup>26</sup> In 1992, in eastern Arnhem Land again, 66% of males and 33% of females were kava users.<sup>5</sup>

Heaviest kava users are described as djadaw' marama in the Gumatj dialect in eastern Arnhem Land; that is, they are known to drink kava for 24 hours from one day to the next, through the night and up to the next morning. Amongst kava users

during 1994-97, 52% of them had a history of drinking in this manner, a common style of usage (Clough, A, unpublished data).

### **Economic impacts**

In the late 1980s kava could be purchased from suppliers in Sydney at \$12.50/kg. The end price to the Arnhem Land consumer in 1990-91 was \$100/kg, a profit rate of 800%. Recently, prices to consumers have varied up to around \$270/kg in the illegal trade with a purchase price in Sydney of \$34/kg, a similar profit rate of around 700%. It has been shown that communities may spend almost one-fifth of available cash resources on kava. Around half of the gross profits from kava sales in Arnhem Land communities leave the community, with the rest redistributed or re-focused locally.

### **How much kava is too much kava?**

From a community point of view, until Aboriginal people themselves decide to stop drinking kava, there is little doubt that it will continue to be used in Arnhem Land. The available data suggest that kava's more serious health effects emerge when kava is used at an average level of more than around 400 g/week. If more than half the males and 20-40% of the females in a community are using it, and if 20% of the available cash in a community is used to purchase it, effects on community functioning are likely.

### **Relating current knowledge to the protocol**

As can be seen from the information above, there is not a great deal of evidence about the precise nature of the health impacts of kava use. In particular the benefit of interventions is unclear. Consequently, the protocol is largely based on a common sense interpretation of the available information as described above.

### **Practitioners should:**

- do a full examination, including skin. This is included to alert clinicians to the probably higher risk these people have for other conditions, such as malnutrition and pneumonia, plus drawing attention to the skin conditions that heavy kava users appear to be predisposed to, including secondary skin infection
- consider full blood examination and liver function tests. The significance of the raised liver enzymes and low lymphocytes are not clear but may signify a health impact via nutrition or toxic effects. Demonstrating altered pathology results to someone interested in the health effects of kava on their body may influence their intake.
- ask about numbers of bags of kava usually consumed and the numbers of people with whom it is shared. This may be important with the planned kava regulation legislation and getting an understanding of the place the drug has in the person's life. More than 400 g per week is likely to lead to health problems.

### **Advice for kava drinkers**

- Annual check-ups. The evidence for this is weak. The recommendation is based on the indication that kava users may turn out to be at higher risk for a number of conditions, such as ischaemic heart disease, serious infectious disease and skin infections. There is no evidence to guide how often these check-ups should be. Annual check-ups are routinely recommended for adults as a 'well person check'. Kava users may be prone to being missed in opportunistic health checks due to the predominance of men drinking kava. Pneumovax and Fluvax

will be particularly important in this group of people, probably at increased risk of malnutrition and pneumonia.

- Think about amount of money leaving the community that could be spent otherwise. This is based on the Top End studies that found that a large proportion of one community's money was leaving the community.
  - People with heart disease or who are pregnant should reduce or stop drinking kava. This is based on the Top End studies described above and a general concern about possible poor impact on pregnancy, especially via poor nutrition.
  - Kava users may have extra chances of serious infections. This is based on the Top End studies described above.
  - Kava drinkers should avoid drinking in 24-hour sessions. This pattern of drinking is associated with very heavy consumption rates and health problems.
  - Using kava with alcohol or benzodiazepines and possibly other drugs makes the bad effects of all the drugs worse. Kava potentiates the sedative effect of benzodiazepines and alcohol.
- Skin and liver problems usually return to normal in about a month after stopping drinking kava. Underweight people tend to regain lost weight.

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