

## Kava drinking in Vanuatu - a hospital based survey

*Abstract: Kava is an intoxicating non-fermented beverage native to the Pacific Islands. In Vanuatu men traditionally drank kava on ceremonial occasions. Now however men and women drink kava on a casual basis. To assess the kava-drinking habits of current-day ni-Vanuatu, 150 people were surveyed at Vila Central Hospital, (50 medical and 50 surgical patients plus 50 staff). 35% of those surveyed drank kava, (9% daily). 59% of men and 15% of women drank kava (~ 4:1). 51% of all men drank kava at least weekly, compared to 11% of women. For any given kava-drinking episode men drank more than women, (4.3 +/- 2 vs 3.3 +/- 1.3 shells). There was no significant difference in age between drinkers and non-drinkers or in usage rates between patient groups or staff. Women attaining higher levels of education and women resident on Vanuatu's main island were more likely to drink kava. Of the women surveyed who were resident on outer islands none drank kava. This study reveals that the consumption of fresh kava on a regular basis is very common in Vanuatu. If this is the case it also suggests that whilst much is written about the dermatopathy, weight loss and, more recently, possible liver disease associated with kava use that these and other health problems are of doubtful significance. This is also supported by field experience. (Pacific Health Dialog 2003 Vol 10 (2) Pg 41-44)*

Robert F Grace\*

### Introduction

Archaeological dating techniques indicate that the non-fermented tranquil intoxicant kava has been consumed in the Pacific for millennia.<sup>1</sup> Vanuatu, (formerly the New Hebrides), is a small island nation in the Southwest Pacific. In keeping with other Pacific island nations kava is widely consumed in Vanuatu. Kava is made from the woody root of the Oceanic pepper plant *Piper methysticum*. (The *Piper methysticum* plant also has traditional medicinal uses<sup>2</sup> however in this article 'kava' will refer only to the beverage). The root is ground or minced then soaked in water before the liquid is filtered off to drink. In some islands of the archipelago the ancient means of preparation was for young boys to masticate the root and spit the cud into a communal bowl to be filtered later. As increasing numbers of ni-Vanuatu adopt a Western lifestyle more women are drinking kava and it is now consumed on a casual basis. However certain traditional drinking customs still prevail. Kava is usually consumed in the early evening, in the company of others, in the quiet, darkened surrounds of the nakamal (or kava bar) and the cup, or half coconut shell, is consumed in a single action. After drinking a sense of tranquil intoxication prevails in which the thoughts and memory remain clear<sup>3</sup>. Traditionally this is a period of quiet reflection. Whilst the strictly formal use of kava has gone it remains the pivotal cultural beverage in Vanuatu.

Gregory et al<sup>4</sup> provide a good description of the etiquette and some of the historical issues surrounding the use of kava in Vanuatu. Whilst the drinking of alcohol is also on the increase in Vanuatu it is not consumed to the same extent as kava. The reasons for this may be economic, as well as cultural, as in Vanuatu kava is substantially cheaper than alcohol. In a society facing significant social challenges kava drinking provides the remnants of a traditional social framework whilst perhaps avoiding the violence and other problems associated with alcohol. There is no contemporary data on the kava drinking habits of Melanesians. Therefore the kava drinking habits of 150 ni-Vanuatu were surveyed.

### Methods

This survey was conducted following local review committee approval. It is a descriptive study. Hospital patients and staff were chosen due to their ready availability and to examine if kava drinkers were over represented in the patient population compared with the staff, a presumably healthy control. Vila Central Hospital is Vanuatu's main tertiary referral hospital; thus people resident in many different islands could be interviewed. This enabled a broader spectrum of the population to be surveyed. An interview questionnaire was given to 50 consecutive medical patients, 50 surgical patients and 50 staff members. Exclusion criteria were age less than 18 years and if the patient was too ill to be approached. Each individual was asked their age, the level at which they finished their education, whether or not they used kava and the frequency they used it. The latter was classed as daily, weekly, monthly or occasionally. They were then asked how many 'shells' of kava they consumed during a typical drinking session. Kava is served from a coconut shell hence this is the standard measure. Participants were also asked their island of residence. Results where appropriate are expressed as the mean +/- the standard deviation.

\*Vila Central Hospital, PMB 013, Port Vila, Vanuatu, Tel. (678) 22053, Fax (678) 22053, Email. [rgrace@vanuatu.gov.vu](mailto:rgrace@vanuatu.gov.vu)

## Results

150 people were surveyed, 80 women and 70 men, 53(35%) drank kava. 59% of men (41) and 15% of women (12) drank kava. Thus men were 4 times more likely to drink kava than women (Table 1).

Of all the people surveyed approximately 1-in-10 used kava daily and 1-in-3 at least weekly. 51% of all men (36) used kava at least weekly compared to 11% of all women (9) (Table 2).

The majority of kava drinkers, 85%(45), consumed kava at least weekly. For any kava-drinking session men reported drinking more than women, 4.3 +/- 2 shells vs 3.3 +/- 1.3 shells (Table 2).

An increasing frequency of kava drinking was not associated with an increase in the number of shells per drinking session (Table 3).

46% of medical patients, 28% of surgical patients and 32% of staff drank kava. The mean age of kava drinkers compared to non-drinkers was 34.4 +/- 14.3 vs 38.3 +/- 14.7 years. 13% of the women surveyed (10) resided on islands other than Efate, (Efate contains the capital city, Port Vila), none of these women drank kava. Women with higher levels of education were more likely to drink kava (Table 4). This educational difference was not seen for males.

## Discussion

There is no contemporary data on kava use amongst the indigenous inhabitants of the Pacific Nations and, apart from Gregory et al's<sup>4</sup> largely historical paper, there is no material published on kava use in Vanuatu. In 1982 a study performed in Tonga examined kava use amongst urbanized Tongans<sup>5</sup> and more recently some material has been published in relation to kava use in Fiji<sup>6</sup> and in Northern Australian aborigines.<sup>7</sup> The study by Finau et al<sup>5</sup> in Tonga found that 48% of males and 1% of females consumed kava. This is similar to the present study although the use amongst ni-Vanuatu is higher, particularly amongst women. The results of this survey indicate that approximately 1-in-3 of the adult population use kava at least weekly and 1-in-10 daily. If this observation is confined to males then 1-in-2 men will use kava at least weekly.

Kava has significant anxiolytic properties. In a recent meta-analysis<sup>8</sup> kava was found superior to placebo in all of the seven trials reviewed. Pharmacologically the anxiolytic properties of kava do not appear to be related to the g-aminobutyric acid (GABA) or benzodiazepine binding sites<sup>9</sup> nor does tolerance seem to develop<sup>10</sup>. Further it appears that kava may have some benefits

over benzodiazepines in that it is reported to preserve reaction time and improve concentration.<sup>11,12</sup> The potential effects of a third of the population regularly using a recognized anxiolytic are enormous.

Kava also has some anti-convulsant properties, which appear to be mediated by sodium channel receptor sites. Presumably this sodium channel affinity accounts for kava's local anaesthetic activity.<sup>13</sup> The kava lactone kavain appears to be the most effective for local anaesthesia. Kavain is capable of producing local anaesthesia lasting hours.<sup>14</sup>

Many studies on kava refer to grams/week or mg/kg of kava.<sup>7,15</sup> However as the content of kava lactones in the dry root varies from 3-20%<sup>16</sup> and the amount extracted varies between plants, regions and nakamals<sup>4</sup> this is a measure of limited application in terms of kava drinking.

People who have tried kava throughout the Pacific report that the kava from Vanuatu is stronger than elsewhere and at least one extract, (5-hydroxydihydrokawain) has been isolated from Vanuatu kava that is not in Fijian kava.<sup>17</sup> Thus not all kava is the same. To complicate matters further there are significant genetic polymorphisms in Vanuatu where approximately 70% of people will be cytochrome P450 2C19-related poor metabolizers. Kaneko et al<sup>18</sup> suggest that a majority of Melanesians, including ni-Vanuatu, metabolize a wide variety of clinically useful drugs to a lesser degree than Caucasians. As so little is known about the pharmacology of kava it is reasonable to suggest that these poor-metabolizers might also metabolize kava to a lesser extent as well. With anecdotally 'strong' kava, containing lactones not found elsewhere, a large proportion of 2C19 poor metabolizers and high rates of kava use, if significant health problems are associated with kava consumption Vanuatu would appear to be the place to look for them.

If kava does produce significant health problems then what specifically should we be searching for? The acquired ichthyosiform skin disorder or kava dermatopathy associated with heavy kava use is well described<sup>19</sup> The condition is reversible and although once thought related to niacin deficiency it is now thought possibly to be a result of a disturbance in cholesterol metabolism.<sup>20</sup> In the study by Mathews et al<sup>7</sup> they noted that high-density lipoproteins were raised in heavy kava drinkers. It is possible that this may have advantageous effects on cardiovascular disease. Similarly it has been found that kavain inhibits cyclooxygenase leading to inhibition of thromboxane A2 and thereby reducing platelet aggregation.<sup>21</sup> Might kava prove to be a myocardial protectant? Backhauss & Krieglstein<sup>22</sup> have already

### If kava does produce significant health problems then what specifically should we be searching for?

shown methysticin, another kava extract, to have a protectant effect on rodent brain tissue following ischaemia. More recently kava has come under a cloud in Europe where several reports of hepatitis and liver failure have been published.<sup>23,24</sup> how these 'herbal extracts' compare to fresh kava drinking is unknown. By way of contrast it is worthy of note that Steiner<sup>25</sup> in the Hawaii Medical Journal reports that the more kava consumed by a population the lower the cancer incidence for that population. Before looking for the potential problems or positive health effects of drinking kava we must first determine the prevalence of kava consumption within the communities of study.

This survey is a small descriptive study based on a sample of convenience to estimate rates of kava consumption and frequency amongst ni-Vanuatu, it does not record specific medical data. It is apparent that kava drinking is very common in Vanuatu, particularly amongst men. In a pure epidemiological sense it is impossible to comment from this study on the health of non-kava drinkers versus kava drinkers. Such a work is a major undertaking and reliant on studies such as this to give

prevalence estimates on rates of kava consumption. However as kava drinking is so common in Vanuatu it would be hoped that serious health problems related to kava drinking would by now be manifest to local practitioners. It is already possible to identify heavy kava drinkers by their 'kava-dermopathy' and low weight but it is unlikely that either of these are serious problems and both are reversible. Indeed the weight loss associated with kava might prove beneficial in reducing the risk of cardiovascular disease and diabetes, two health problems on the increase within the Pacific. Indeed if Steiner<sup>25</sup> is to be believed it may be that kava will prove to have a cancer protective effect?

Kava is anxiolytic, probably non-addictive<sup>14</sup> and has none of the problems of violence associated with alcohol. A more detailed study is required to document the health status of ni-Vanuatu kava drinkers versus non-drinkers. At present with kava drinking being so common it seems likely from field experience that kava is relatively harmless, provides a good alternative to alcohol and a remnant of traditional life.

**Table 1. Kava use by gender and island of residence (% of gender per island of residence)**

Gender	Kava	Efate	Outer Island	Total
Female	No	58 (83%)	10 (100%)	68
Female	Yes	12 (17%)	0 (0%)	12
Male	No	20 (39%)	9 (47%)	29
Male	Yes	31 (61%)	10 (53%)	41

**Table 2. Kava use by gender and frequency of use (% of gender per frequency of use)**

Gender	Daily	Weekly	Monthly	Occasionally	Total
Female	2 (17%)	7 (58%)	2 (17%)	1 (8%)	12 (100%)
Male	11 (27%)	25 (61%)	1 (2%)	4 (10%)	41 (100%)

**Table 3. Kava shells consumed per session(mean) vs frequency of drinking**

Gender	Daily	Weekly	Monthly	Occasionally	Overall
Female	3.0	3.6	3.5	2.0	3.3 +/- 1.3
Male	4.1	4.6	4.0	3.3	4.3 +/- 2.0

**Table 4. Kava use by gender and education, (% of gender per level of education)**

Gender	Kava	Village	Primary	Secondary	Tertiary	Total
Female	No	2 (100%)	30 (88%)	15 (83%)	21 (81%)	68
Female	Yes	0 (0%)	4 (12%)	3 (17%)	5 (19%)	12
Male	No	4 (50%)	13 (42%)	8 (38%)	4 (40%)	29
Male	Yes	4 (50%)	18 (58%)	13 (62%)	6 (60%)	41

## References

1. Hocart CH, Frankhauser B, Buckle DW. Chemical archaeology of kava, a potent brew. *Rapid Commun Mass Spectrom* 1993;7:219-224.
2. W.H.O. Regional Publication Western Pacific Series No.19. *Medicinal plants in the South Pacific* © World Health Organisation 1998.
3. Norton SA. Herbal medicines in Hawaii from tradition to convention. *Hawaii Med J* 1998;57:382-386.
4. Gregory RJ, Gregory JE, Peck JG. Kava and prohibition in Tanna, Vanuatu. *Br J Addict* 1981;76:299-313.
5. Finau SA, Stanhope JM, Prior IA. Kava, alcohol and tobacco consumption among Tongans with urbanization. *Soc Sci & Med* 1982;16:35-41.
6. Singh YN. Kava: an overview. *J Ethnopharmacol* 1992;37: 13-45
7. Mathews JD, Riley MD, Fejo L, et al. Effects of heavy usage of kava on physical health: summary of a pilot survey in an aboriginal community. *Med J Aust*, 1998; 148: 548-555.
8. Pittler MH, Ernst E. Efficacy of kava extract for treating anxiety: systematic review and meta-analysis. *J Clin Psychopharmacol* 2000; 20:84-89.
9. Davies LP, Drew CA, Duffield P, et al. Kava pyrones and resin: studies on GABAA, GABAB and benzodiazepine binding sites in the rodent brain. *Pharmacol Toxicol* 1992;71:120- 126.
10. Scherer J. Kava-kava extract in anxiety disorders: an outpatient observational study. *Adv Ther* 1998;15:261-269. 988;148:548-555.
11. Munte TF, Heinze HJ, Matzke M, Steitz J. Effects of oxazepam and an extract of kava roots (Piper methysticum) on event-related potentials in a word recognition task. *Neuropsychobiology* 1993;27:46-53.
12. Heinze HJ, Munte TF, Steitz J, Matzke M. Pharmacopsychological effects of oxazepam and kava-extract in a visual search paradigm assessed with event-related potentials. *Pharmacopsychiatry* 1994;27:224-230.
13. Singh YN. Effects of kava on neuromuscular transmission and muscle contractility. *J Ethnopharmacol* 1983; 7:267-276.
14. Lebot V, Merlin M, Linstrom L. Kava the Pacific drug. New Haven, CT: *Yale University Press*.1992.
15. Kinzler E, Kromer J, Lehmann E. Effect of a special kava extract in-patients with anxiety-, tension-, and excitation states of non-psychotic genesis. Double blind study with placebos over 4 weeks. *Arzneimittelforschung* 1991;41:584-588.
16. Wren PC. Potter's new cyclopaedia of botanical drugs and preparations. *Saffron Walden*: C.W. Daniel Company Ltd; 201. 1988.
17. Cheng D, Lidgard RO, Duffield PH, Brophy JJ. Identification by methane chemical ionization gas chromatography/mass spectrometry of the products obtained by steam distillation and aqueous acid extraction of commercial Piper methysticum. *Biomed Environ Mass Spectrum* 1988;17:371-376.
18. Kaneko A, Lum JK, Yaviong L, et al. High and variable frequencies of CYP2C19 mutations: medical consequences of poor drug metabolism in Vanuatu and other Pacific islands. *Pharmacogenetics* 1999;9:581-590.
19. Norton SA, Ruze P. Kava dermopathy. *J Am Acad Dermatol* 1994;31:89-97.
20. Ruze P. Kava-induced dermopathy: a niacin deficiency? *Lancet*. 1998;335:1442-1445.
21. Gleitz J, Beile A, Wilkens P, Ameri A, Peter T. Antithrombotic action of kava pyrone (+)-kavain prepared from Piper methysticum on human platelets. *Planta Med* 1997;63:27-30.
22. Backhauss C, Krieglstein J. Extract of kava (Piper methysticum) and its methysticum constituents protect brain tissue against ischemic damage in rodents. *Eur J Pharmacol* 1992;215:23-32.
23. Escher M, Desmeules J, Giostra E, Mentha G. Hepatitis associated with Kava, a herbal remedy for anxiety. *BMJ* 2001;322:1097.
24. Kraft M, Spahn TW, Menzel J, et al. Fulminant liver failure after administration of the herbal anti-depressant Kava-Kava [German]. *Dtsch Med Wochenschr* 2001;7:126.
25. Steiner GG. The correlation between cancer incidence and kava consumption. *Hawaii Med J* 2000;59:420-2.