AN ANALYSIS OF KAVA KAVA
Kava has an interesting history. It has been safely consumed ceremonially in the South Pacific and other parts of the world. While the true origins of Kava’s discovery are difficult to trace, Captain Cook dubbed the plant *Piper methysticum*, or “intoxicating pepper,” which is the scientific name it is known by today.

Today, usage of Kava beverages in tropical climates is similar to the use of alcoholic beverages in the West. However, the plant from which the beverage is made also has useful properties for anxiety, hyperactivity, stress, and restlessness.

Many studies have been conducted on Kava; below, we summarize just a few:

- In 2009, the journal *Psychopharmacology* published a 3-week placebo-controlled, double blind crossover trial that recruited 60 adult participants with 1 month or more of elevated generalized anxiety. They received five Kava tablets per day were prescribed containing 250 mg of kavalactones/day. The study found that participants’ Hamilton Anxiety Scale scores were significantly reduced; Kava was also effective in reducing depression. Participants experienced no serious adverse effects and no clinical hepatotoxicity.\(^1\)

- In 2010, the department of Zoology at Cairo University studied the effects of Kava on rats. They found no adverse effects on the liver and kidneys, and suggested that Kava might be preferred to treat anxiety, due to the lack of withdrawal and addictive properties.\(^2\)

- In 2001, *CNS Spectrums* published an article examining the effects of 280 mg kavalactones administered to healthy volunteers each day over 4 weeks. No adverse effect differences were found between Kava and placebo.\(^3\)

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n_acetylcholinesterase_activity_and_some_serum_biochemical_parameters.

In 2014, the University of Minnesota College of Pharmacy and Masonic Cancer Center found that Kava may prevent the development of tobacco-smoke induced lung cancer in a mouse lung tumorigenesis model.4

In 2008, a study in Cancer Prevention Research found that the Kava chalcone flavokawain A exhibits “strong antiproliferative and apoptotic effects against human urinary bladder cancer cell lines derived from different stages of bladder cancer.”5

In 2005, the Cochrane Database of Systematic Reviews analyzed 7 randomized controlled human clinical studies on Kava, and concluded that Kava had a “significant treatment effect” on the Hamilton Anxiety Scale. Few adverse effects were reported, and even then, the adverse effects were mild, transient, and infrequent.6

Despite the encouraging results in laboratory analysis, there was a real struggle to bring Kava to the masses. In late 2001, the FDA investigated alleged Kava-related liver toxicity; the following year, Health Canada, among other regulatory agencies, banned preparations containing Kava.8 Interestingly, these issues only became known when it became a consumer product. Here are some of the suspected reasons why:

- The plant cultivar – Traditionally used cultivars are expensive to import; therefore, suppliers were using cultivars that had no history of safe use.
- The part of the plant – Traditionally the rhizome was used, with no hepatotoxic side effects; in recent years, some suppliers were reportedly using aerial parts, as well.
- The age of the plant – The Kava should be 5 years old before harvesting; in recent years, suppliers were reportedly using very young plants.

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Unlicensed Kava is still classified by Health Canada as high risk, and selling unlicensed Kava possesses several liability risks for both suppliers and retailers, as well as a safety risk for consumers. For three-and-a-half years, Doctor’s Choice fought Health Canada’s decision banning Kava and was successful in March 2012, as the first company to legally introduce Kava supplements back onto the Canadian market, with a fully-approved Natural Product Number license from Health Canada. Coincidentally, the international Kava market soon after experienced a change in regulation, as well, because Germany lifted their Kava ban⁹, determining that such a ban based on perception over data was not only unfair, but also illegal.¹⁰ As the American Botanical Council notes, the German ban reversal ruling was based on the following factors:

1. The number of hepatotoxicity case reports was inflated by the inclusion of duplicates.
2. The ad hoc process used to make the risk assessment was likely to produce different results if applied by different assessors.
3. The majority of the reports could be more easily explained by known co-medications or alcohol abuse.
4. The application of a suitable method for assessing liver damage in clinical research reduced the number of cases to three reports where the liver damage was possibly caused by Kava, as there were not any obvious, more likely alternative explanations.
5. The number of possible cases was so small (less than one case/one million monthly doses) that it did not justify the ban.
6. Risk assessments must be performed in the context of their therapeutic environment. "A drug must not be removed from the market if all possible replacements for it carry (or might potentially carry) an even higher risk." Pharmaceutical alternatives to Kava have known significant adverse effects that might be more harmful than those caused by Kava.
7. A case report is not proof of causality. The regulatory authority cannot act on the mere suspicion of potential danger; it has the obligation to provide evidence for both the alleged dangers and the causal relationship with the suspected medication.
8. Once the regulatory authority has accepted clinical proofs of efficacy, a company having a licensed drug on the market is not obliged to continuously provide new evidence of efficacy, and the regulator cannot withdraw its approval just because new standards are published at a later date.¹¹

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While some seem to believe that Health Canada lifted the Kava ban on a whim, in reality, it was the result of many hours of hard work. All Kava products being sold in Canada today are in a direct response of Doctor’s Choice’s pioneering work for the consumer’s rights to purchase the product without discrimination and to feel confident in the positive clinical outcomes that laid the groundwork for Kava’s re-introduction. Still, as Kava supplements have flooded the market, problems have occurred, as well.

Just this year, it was reported that Dr. Mathias Schmidt in Germany and the Vanuatu Ambassador to the European Union, Roy Mickey Joy, in Brussels, have both expressed concerns about the quality of Vanuatu Kava that is currently overwhelming the US. Both men previously fought to defend Vanuatu’s export market in Europe. Dr. Schmidt received a complaint from the US stating that the country was being overwhelmed by “Tudei Kava”, as well as leaves and stalks being marketed as “Kava.” After analyzing the numbers, Dr. Schmidt stated, “That’s almost 60 tons of non-noble non-root material sold as Kava in 2016 by just one exporter. I thought the Vanuatu Kava Act had been changed, but if someone like [this single supplier] can sell such quantities without any consequences, there must be more than just one person closing their eyes.”

As a result of these concerns, a new Kava Export Standard was scheduled to be implemented March 1; this standard would penalize those using “Tudei Kava” and Kava mixed with “Makas.” What are these strains, and why are they of such concern?

“Tudei Kava” is called such because the effects last two days. Some suppliers have suggested that “Tudei Kava” is a safe variety with no liver concerns. They suggest it is practically interchangeable with other varieties—which is true in that once dried and ground, Tudei and noble Kavas are physically indistinguishable. However, they are not interchangeable. “Tudei Kava” is actually a wild type of Kava which is unsuitable for consumption. Even historically, native Pacific Islanders consumed Tudei only occasionally, as Tudei cultivars were known to have side effects of nausea and lethargy (called a “Kava hangover” by some). Flavokawain B (FKB) is a chalcone from Kava root that is toxic to some liver cells.

In fact, “Tudei Kava” has been banned for export because it is so dangerous; yet, there are still those

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17 Kalm with Kava.
advocating for its safety. Interestingly, even those promoting “Tudei Kava” recognize that Kava extracted certain ways, such as with harsh chemical solvents, would be wise to avoid. With traditional preparation, extraction, and consumption, the amount of FKB in Kava is almost non-existent.

“Makas” are the hard fibers that remain in ground, micronized kava; they are known to cause nausea. This could be for similar reasons as Tudei, since the undesirable flavokawains are concentrated there. Most Kava processors will not remove “Makas” from their product, because it results in a 50% loss of volume, and, therefore, a loss of revenue. The consequences of this, though, include nausea and dermopathy—a scaly skin rash that occurs in those who are heavy Kava consumers.

The Kava (Amendment) Act passed in 2015 sought to crack down on risky Kava import practices. Now, all Kava must be noble root, clean, and free of any defect or disease. A study published by the scientific journal Planta Medica in Germany could not find any toxicity for noble Kava, but suggested “Tudei Kava” safety needs to be investigated. The German study is available in full here (original is referenced below).

### Table 1. Kavalactone and pipermethystine content of the three kava extracts

<table>
<thead>
<tr>
<th>Component</th>
<th>Methanolic root</th>
<th>Acetonic root</th>
<th>Methanolic leaves</th>
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</thead>
<tbody>
<tr>
<td>Methysticin</td>
<td>16.6</td>
<td>17.3</td>
<td>0.6</td>
</tr>
<tr>
<td>Dihyphromethysticin</td>
<td>12.0</td>
<td>12.4</td>
<td>11.3</td>
</tr>
<tr>
<td>Kavain</td>
<td>16.2</td>
<td>14.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Dihydrokavain</td>
<td>13.4</td>
<td>13.7</td>
<td>10.2</td>
</tr>
<tr>
<td>Yangonin</td>
<td>13.6</td>
<td>13.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Dimethoxyyangonin</td>
<td>9.8</td>
<td>10.6</td>
<td>0.5</td>
</tr>
<tr>
<td>Total kavalactones</td>
<td>81.6</td>
<td>81.4</td>
<td>24.1</td>
</tr>
<tr>
<td>Pipermethystine</td>
<td>0.011</td>
<td>0.011</td>
<td>1.34</td>
</tr>
</tbody>
</table>

Kavalactones were analyzed with reversed phase HPLC and pipermethystine by GC-MS as described in Materials and methods. Units are % of dried extract (w/w).

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21 Garae, 2017b.

Table 1 above gives more insight into the difference mature Kava roots can make. Doctor’s Choice only uses 5 year noble Kava roots. For the leaves and stems, it should first be noted that pipermethystine is present; this is a toxic alkaloid that can be found when leaf or stem material contaminates Kava products during high volume production and/or low quality control. There is also a drastic difference in kavalactone content between the root and leaf portions, as the leaves only account for approximately one quarter of the total kavalactone content. Based on Table 1, kavalactones are much higher in the root.

<table>
<thead>
<tr>
<th>Key</th>
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<tbody>
<tr>
<td>MET: methysticin</td>
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<tr>
<td>DHM: dihydromethsticin</td>
</tr>
<tr>
<td>KAW: kavain</td>
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<td>YAN: yangonin</td>
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<td>DHK: dihydrokavain</td>
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<tr>
<td>DMY: demethoxyyangonin</td>
</tr>
</tbody>
</table>

The chart above demonstrates what Kava levels should be using a high quality 5-year noble root Kava strain.

When true 5-year noble Kava roots are used, the product is generally recognized as safe (GRAS) and very effective for treating anxiety and stress. True 5-year noble root powder or liquid will cause a numbing

effect when placed on the tongue. This is just one test to use when choosing Kava. Sadly, just licensing
the product does not guarantee that all Kava products are using the top-quality material; the consumers
must do their own research and determine which sources they deem reliable, now that they are given
the freedom of choice. We advise customers to choose Kava from trusted suppliers, such as Doctor’s
Choice, as lesser qualities may jeopardize the product’s health benefits.

Doctor’s Choice is very concerned with the questionable global quality of Kava. Our scientific team has
invested hundreds of hours of research and lab analysis in order to produce the therapeutic quality of
Kava. Shortcuts are being taken in the harvesting stage, and the greed for added profits is being
overlooked as filler material is blended with root material. The extraction process is also of concern, as
harsh solvents are being used with solvent residue left in the finished material. Noble Kava roots of 5
years have a long and safe history of use when prepared the traditional way. As with all good things,
they can be manipulated for added profit, and as a result, the lesser quality jeopardizes not only the
poor product, but also casts doubt on those of high quality. The global Kava industry has already
experienced the impact of negative press and public perception of substandard Kava, and through the
efforts of companies like Doctor’s Choice, the regulatory hurdles have been removed, but for some, the
wariness remains.

It is crucial to preserve at all costs the quality and integrity of Kava so future generations can safely use
this amazing plant without the fear of contamination or ill health. When choosing to purchase a Kava
product, use only those companies that prove they are using quality 5-year noble roots that have been
prepared ethically and backed by clinical studies. When consumers demand to purchase products that
use 5-year noble roots, they ensure the growth and longevity of the Kava industry.
References


