

Kava: The Safety & Efficacy of Water Extracts

Traditional Use: Water Extract

Kava is, or once was, consumed in a wide range of Pacific Ocean societies, from coastal areas of New Guinea to Polynesian Hawaii. When European explorers first landed on remote Pacific islands, they encountered societies in which Kava drinking was an integral part of religious, social, political and economic life.¹

Kava was also used as an important ingredient in the traditional medicine of many Pacific Islands societies and its uses included: relief of sore throat (the root was chewed), insomnia, general debility, urinary tract problems, gonorrhoea, headache, colds, upset digestion (especially in children), constipation, leprosy and to relax fatigue-stiffened muscles. Kava beverage was regarded as having sedative activity, able to soothe the nerves, relax the mind and body, able to induce refreshing sleep and to ease pain.^{1,2,3,4}

Kava was traditionally prepared by infusing masticated (chewed), pulverised or grated root with cold water or coconut milk. The solid residue was filtered out through bunches of bracken fern leaves held in a woven device, or strained through plant fibres (usually from the bark of the sea hibiscus (*Hibiscus tiliaceus*) or coconut fibres). In later years, it was filtered by hand with porous cotton cloth.^{1,5,6} Traditional preparation results in an aqueous slurry containing a suspension of lipid material in which the kava lactones are found.⁷ (Chewing the root does not result in enzymatic breakdown, but instead breaks up the root thus enhancing emulsification of the resin so that it can be assimilated into the water.⁸)

Western traditional uses of Kava (dried root, infusion and aqueous ethanol extract) include infection and inflammation of the genitourinary tract, neuralgia, bronchitis, dyspepsia, dysmenorrhoea and rheumatism.^{9,10}

Active Constituents

A major constituent of Kava root is the resin which contains kava lactones (also known as kava pyrones). The major kava lactones are kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and desmethoxyyangonin. Extracts are often standardised for kava lactone content.¹¹ Other constituents include flavokavins and chalcone pigments.¹²

Kava lactones are more soluble in organic solvents such as ethanol and acetone but still can be present in water extracts. A traditional water extract (1:10) prepared from fresh, peeled roots and taken in a daily dose of 300 mL has been shown to contain 210 mg of kava lactones.¹³ However, it is likely that the levels of kava lactones will vary widely, depending on how the water extract is made. This is probably reflected in early animal studies which produced inconclusive results in pharmacological testing for water extracts (administered by injection).⁷ A water extract chemically verified to contain no kava lactones was found to have markedly reduced activity compared to the kava lactone-containing lipid extract (oral route).⁷ Kava lactones are responsible for the main psychopharmacological activity,¹⁴ but other constituents such as those present in water extract are also likely to be required (e.g. to enhance the bioavailability of the lactones).¹¹

TGA Regulations

In July 2002 the TGA (Therapeutic Goods Administration) initiated a voluntary withdrawal of all complementary medicines containing Kava following the death of a woman who was taking a herbal preparation containing Kava. A review of the safety of Kava, undertaken by an expert committee of the TGA, decided in August 2003 that only certain forms of Kava were suitable for use in listed medicines. Products must be made from water extract/dispersion or whole rhizome and the daily dosage of kava lactones must be capped (at 250 mg).

Efficacy: Kava Lactones

The following clinical results indicate that kava lactones have sedative and anxiolytic activity.

A meta-analysis which reviewed published clinical studies to August 2002 concluded that a significant reduction in anxiety occurred for patients receiving Kava acetone extract compared with those receiving placebo. The Hamilton Anxiety scale total score was a common outcome measure of these trials. The dosage of kava lactones provided by the standardised extract varied (105–210 mg/day), and the duration of treatment ranged from 4 to 24 weeks.¹⁵ More recently, in a well-designed trial Kava acetone extract effectively treated sleep disturbances associated with nonpsychotic anxiety disorders.¹⁶

One of the trials included in the meta-analysis found that treatment with standardised Kava acetone extract (210 mg/day kava lactones) reduced depression and menopausal symptoms in addition to menopausal anxiety.¹⁷

In several double-blind trials, administration of isolated kavain (400–600 mg/day) provided benefit for patients with anxiety symptoms.^{18,19,20}

Actions

Anxiolytic, mild sedative, skeletal muscle relaxant, mild analgesic.

Indications

- Anxiety, nervous tension, insomnia, stress
- Menopausal anxiety, mild depression
- Skeletal muscle spasm or tension
- Pain of muscular or nervous origin (e.g. neuralgia)
- Sexual dysfunction due to anxiety
- Improving cognitive performance
- May be useful to assist in withdrawal from benzodiazepines

Cautions and Contraindications

Short-term (1–2 months) or intermittent use is recommended. For longer use suggest a liver function test every few months and discontinue if abnormal readings occur (other than mild increase in gamma-glutamyl transferase). Caution is also advised in patients with a history of excessive alcohol consumption and those taking potentially hepatotoxic drugs. Contraindicated in those with pre-existing liver damage. Children under 12 and those who are pregnant or nursing are not recommended to use Kava.

References

- ¹ Lebot V, Merlin M, Lindstrom L. *Kava - the Pacific elixir: the definitive guide to its ethnobotany, history and chemistry*. Yale University Press, New Haven, 1992, pp 111, 135-136.
- ² Cambie RC, Ash J. *Fijian Medicinal Plants*. CSIRO Australia, 1994.
- ³ Titcomb M. *J Polynes Soc* 1948; **57**: 105-171
- ⁴ Steinmetz EF. *Piper Methysticum (Kava - Kawa - Yaqona): famous drug plant of the South Sea islands*. Amsterdam, E.F. Steinmetz, 1960.
- ⁵ Norton SA, Ruze P. *J Am Acad Dermatol* 1994; **31**(1): 89-97
- ⁶ Singh YN. *J Ethnopharmacol* 1992; **37**(1): 13-45
- ⁷ Jamieson DD, Duffield PH, Cheng D et al. *Arch Int Pharmacodyn Ther* 1989; **301**: 66-80
- ⁸ Keller F, Klohs MW. *Lloydia* 1963; **26**(1): 1-15
- ⁹ British Herbal Medicine Association's Scientific Committee. *British Herbal Pharmacopoeia*. BHMA, Bournemouth, 1983.
- ¹⁰ Felner HW, Lloyd JU. *King's American Dispensatory*, 18th Edn, 3rd revision, 1905, reprinted Eclectic Medical Publications, Portland, 1983.
- ¹¹ Mills S, Bone K. *Principles and Practice of Phytotherapy: Modern Herbal Medicine*. Churchill Livingstone, Edinburgh, 2000.
- ¹² *ESCOP Monographs: The Scientific Foundation for Herbal Medicinal Products*, 2nd Edn. ESCOP, European Scientific Cooperative on Phytotherapy, Exeter, 2003.
- ¹³ Loew D, Franz G. *Phytomedicine* 2003; **10**(6-7): 610-612
- ¹⁴ Cairney S, Clough AR, Maruff P et al. *Neuropsychopharmacology* 2003; **28**(2): 389-396
- ¹⁵ Pittler MH, Ernst E. *Cochrane Database Syst Rev* 2003; (1): CD003383
- ¹⁶ Lehl S. *J Affect Disord* 2004; **78**(2): 101-110
- ¹⁷ Warnecke G. *Fortschr Med* 1991; **109**: 119-122
- ¹⁸ Scholing WE, Clausen HD. *Med Klin* 1977; **72**(32-33): 1301-1306
- ¹⁹ Lindenberg D, Pitule-Schodel H. *Fortschr Med* 1990; **108**(2): 49-50, 53-54
- ²⁰ Lehmann E, Klieser E, Klimke A. *Pharmacopsychiatry* 1989; **22**(6): 258-262