Pharmacogn. Commn. 2017; 7(2): 104-105
A multifaceted peer reviewed journal in the field of Pharmacognosy and Natural Products
www.phcogcommn.org

This occasional section within the journal surveys visions and achievements, often not on the main track of the developing biomedical sciences, but all relating to discoveries and developments of medicinals – both ancient and modern. What they have in common, in one way or another, is providing further background and glances around the edges of the core discipline of pharmacognosy, as it has been and continues to evolve within our times.

Mitragyna speciosa may be useful as an opioid alternative for severe pain relief. More research is required

I.E.Cock[1,2*]
[1]School of Natural Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.
[2]Environmental Futures Centre, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.

Mitragyna speciosa Korth. (commonly known as kratom or ketum) is an evergreen tree in the coffee family (Rubiaceae). It is native to the Indochina and Malaysia botanical regions of Southeast Asia. It is indigenous to Indonesia, Malaysia, Myanmar, Papua New Guinea and Thailand and is a part of the traditional pharmacopeias of all of the regions in which it occurs. It is used traditionally to relieve pain and fatigue, as well as cough and diarrhoea. Kratom has potent pain killing effects which begin within 5-10 min of consumption and last for up to 5 hours.[1] A number of pharmacologically compounds have been identified in kratom leaves, including mitragynine, mitragynine pseudoindoxyl, mitraphylline, 7-hydroxymitragynine, paynantheine, speciogynine, rhynchophylline, raubasine and corynantheidine.[2-6] Interestingly, whilst they have similar indications as the opoids for pain relief, kratom and the opoids have pharmacologically and biochemically distinct actions.[7] Thus, kratom is also useful to aid in opoid withdrawal.

Despite its therapeutic benefits, the use of kratom has been banned in the Malaysia, Thailand and USA. It is also considered a controlled narcotic in other countries including Australia, New Zealand and many European countries. Furthermore, kratom has recently gained popularity for recreational purposes and can result in addiction. Adverse reactions including increased heart rate and blood pressure, liver toxicity, respiratory depression, nausea, constipation, vomiting and insomnia have also been reported in some patients. Chronic use may also result in more severe side effects including seizure, addiction and psychosis. Thus, there are very good reasons to control the use of this drug. However, despite its reported side effects, it appears to be less toxic and less addictive than the opoid drugs. Thus, research into this plant should be encouraged for the development of new pain relief and anti-addiction drugs.

REFERENCES

1. Rech MA, Dionahey E, Cappiello Dziedzic JM, *et al.* New drugs of abuse. Pharmacotherapy. 2015;35(2):189-97.
2. Warner ML, Kaufman NC, Grundmann O. The pharmacology and toxicology of kratom: from traditional herb to drug of abuse. International Journal of Legal Medicvine. 2016;130(1):127-138.
3. Adkins JE, Boyer EW, McCurdy CR. *Mitragyna speciosa,* a psychoactive tree from Southeast Asia with opiod activity. Current Topics in Medicinal Chemistry. 2011;11(9):1165-75.
4. Suhaimi FW, Yusoff NH, Hassan R, *et al.* Neurobiology of kratom and its main alkaloid mitragynine. Brain Research Bulletin. 2016;26(Part 1):29-40.
5. Prozialeck WC, Jivan JK, Andurkar SV. Pharmacology of kratom: an emerging botanical agent with stimulant, analgesic, and opoid-like effects. The Journal of the American Oestopathic Association. 2012;112(12):792-9.
6. Takayama H, Ishikawa H, Kurihara M, *et al.* Studies on the synthesis and opoid agonistic activities of mitragynine-related indole alkaloids: Discovery of opoid agonists structurally different from other opoid ligands. Journal of Medicinal Chemistry. 2002;45(9):1949-56.
7. Prozialeck WC. Update on the pharmacology and legal status of kratom. The Journal of the American Oestopathic Association. 2016;116(12):802-9.

Correspondence

I.E.Cock

School of Natural Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA

Tel.: +61 7 37357637; fax: +61 7 37355282.

E-mail: editor@phcogcommn.org, I.Cock@griffith.edu.au

Daily nut consumption is linked with decreased incidence of a wide range of diseases

I.E.Cock[1,2*]
[1]School of Natural Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.
[2]Environmental Futures Centre, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.

Diets rich in beneficial phytochemicals have been linked decreased incidences of several chronic diseases including cardiac disease, some cancers and diabetes.[8-12] Whilst most of these studies have concentrated on culinary herbs and high antioxidant fruits, recent laboratory based studies have also highlighted the therapeutic potential of edible nuts the the prevention and treatment of some acute and chronic diseases.[13-15] A recent meta-analysis study examined a wide range of epidemiological reports on the correlation of nut consumption and disease preven-

tion.[16] That study reported that consumption of as little as 20 g or nuts daily (approximately a handful) significantly inhibits the incidence of some chronic diseases. Indeed, the incidence of coronary disease was decreased by approximately 30% in individuals consuming nuts compared to the average incidence globally. Furthermore, the risk of cancer was 15% lower in people who regularly consumed nuts (the effects against individual types of cancer was not specified) and the overall risk of premature death from all causes was decreased by more than 20%. The correlation between nut consumption and premature death from respiratory disease (approximately 50%) and diabetes (nearly 40%) was even more noteworthy.

The report was an extensive study, analysing data from approximately 820,000 participants across 29 published studies from different geographical regions and cultures. The study included all types of tree nuts, and also included peanuts (which are actually legumes, but are often considered as nuts). Interestingly, the analysis reported that the results were similar regardless of the type of nut examined, or the total nut consumption. The authors concluded that as all nuts and peanuts are high in fibre, magnesium and polyunsaturated fats (which are beneficial for reducing blood cholesterol levels and decreasing cardiovascular disease) and some nuts are also high in antioxidants (which reduce cancer risk), that these components may be responsible for these beneficial effects. Whilst prevention of chronic disease correlated with daily consumption of nuts up to 20 g per day, there was no additional benefit from high consumption.

REFERENCES

1. Potter JD. Cancer prevention: Epidemiology and experiment. Cancer Letters. 1997;114(1):7-9.
2. Jamieson N, Sirdaarta J, Cock IE. The anti-proliferative properties of Australian plants with high antioxidant cap[acities against cancer cell lines. Pharmacognosy Communications. 2014;4(4):71-82. DOI: 10.5530/pc.2014.4.8
3. Sirdaarta J, Maen A, Rayan P, *et al*. High performance liquid chromatography-mass spectrometry analysis of high antioxidant Australian fruits with antiproliferative activity against cancer cells. Pharmacognosy Magazine. 2016;12(2):S181-S94. DOI: 10.4103/0973-1296.182178
4. Sirdaarta J, Matthews B, White A, *et al*. GC-MS and LC-MS analysis of Kakadu plum fruit extracts displaying inhibitory activity against microbial triggers of multiple sclerosis. Pharmacognosy Communications. 2015;5(2):100-15. DOI: 10.5530/pc.2015.2.2
5. Maen A, Cock IE. Inhibitory activity of Australian culinary herb extracts against the bacterial triggers of selected autoimmune diseases. Pharmacognosy Communications. 2015;5(2):130-9. DOI: 10.5530/pc.2015.2.4
6. Lebaratoux P, Sirdaarta J, Rayan P, *et al*. An evaluation of the antibacterial, anti-Giardial, anticancer and toxicity properties of selected nut extracts. Pharmacognosy Communications. 2016;6(3):174-84. DOI: 10.5530/pc.2016.3.7
7. Desegaulx M, Sirdaarta J, Rayan P, *et al*. An examination of the anti-bacterial, anti-fungal and anti-Giargial properties of macadamia nut. Acta Horticulturae. 2015;1106:239-246.
8. Boyer H, Cock IE. Evaluation of the potential of *Macademia integriflora* extracts as antibacterial food agents. Pharmacognosy Communications. 2013:3(3):53-62.
9. Aune D, Keum NN, Giovannucci E, *et al*. Nut consumption and risk of cardiovascular disease, total cancer, all-cause and cause-specific mortality: a systematic review and dose-response meta-analysis of prospective studies. BMC Medicine. 2016;14(1):207.

Correspondence

I.E.Cock

School of Natural Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA

Tel.: +61 7 37357637; fax: +61 7 37355282.

E-mail: editor@phcogcommn.org, I.Cock@griffith.edu.au