

Medicinal Plant Images

IE Cock^{1,2,*}

¹Centre for Planetary Health and Food Security, Nathan Campus, Griffith University, Nathan, Brisbane, Queensland, AUSTRALIA.

²School of Environment and Science, Nathan Campus, Griffith University, Nathan, Brisbane, Queensland, AUSTRALIA.

Correspondence:

Dr. IE Cock^{1,2}

¹Centre for Planetary Health and Food Security, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.

²School of Environment and Science, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.

Email id: i.cock@griffith.edu.au

DOI: 10.5530/pc.2022.4.31



Figure 1: *Tasmannia lanceolata* (Poir.) A. C. Sm. (family Winteraceae), commonly known as Tasmanian pepper or mountain pepper berry, is shrub which is endemic to the woodlands and cool temperate rainforests of Tasmania and the south-eastern region of the Australian mainland. The leaves, berries and bark of this plant have traditional uses as a food flavouring, and as a medicinal plant. Australian Aborigines used *T. lanceolata* as a therapeutic agent to treat stomach disorders and as an emetic, as well as general usage as a tonic.¹ That study reported that *T. lanceolata* was used by Australian Aborigines for the treatment and cure of skin disorders, venereal diseases, colic, stomach ache and as a quinine substitute. Several of these traditional uses have been validated in recent publications. The antibacterial properties of *T. lanceolata* have been particularly well reported against a wide variety of bacterial species.²⁻⁶ Similarly, the related species *Tasmannia stipitata*⁷ and *Pseudowintera colorata* (Raoul) Dandy⁸ have also been reported to inhibit the growth of multiple bacteria. *T. lanceolata* extracts have also been reported to inhibit the growth of the gastrointestinal protozoal parasite *Giardia duodenalis*.^{6,9} Similar extracts also inhibit the proliferation of several human cancer cell lines.^{6,10} The photograph was taken in the Royal Tasmanian Botanical Gardens, Hobart, Australia by Dr Ian Cock in January 2022.

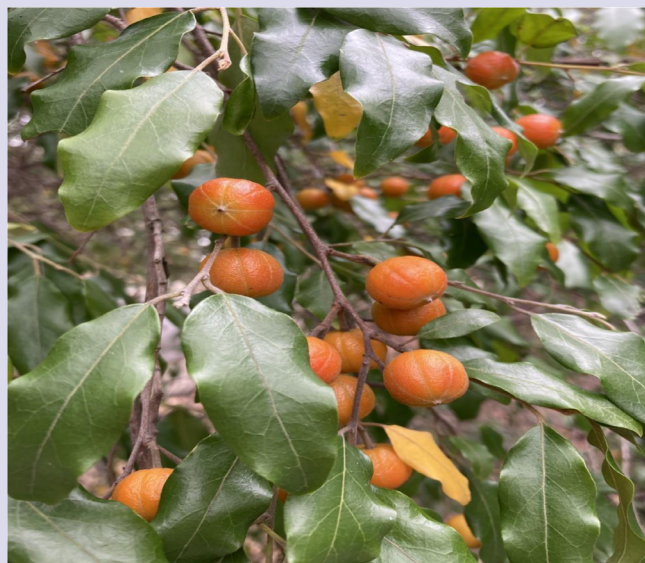


Figure 2: *Petalostigma trilocularae* (commonly known as quinine bush) unripe fruit and leaves. *Petalostigma* is an Australian Euphorbiaceae genus which consists of 7 species. They grow to between 2 and 10 metres in height and have bright orange fruit (when ripe). *Petalostigma* species were used extensively by indigenous Australians to treat a myriad of bacterial, fungal and viral diseases.¹¹ *Petalostigma pubescens* and *P. trilocularae* bark and fruit decoctions were used extensively by Australian Aborigines as an antiseptic and to treat sore eyes. Fruit were also held in the mouth to relieve toothache.¹¹ Despite its common name, there is no scientific evidence to support the presence of quinine in the fruit or leaves (the common name is presumably due to the extremely sharp bitter flavour of the fruit). Recent studies have confirmed the antibacterial, antifungal and antiviral activity of extracts of the leaves and fruit of this plant.^{12,13} Additionally, a recent study also reported that *Petalostigma* spp. extracts also potentiated the activity of some conventional antibiotics, even against bacterial that are otherwise resistant to those antibiotics.¹⁴ This photograph was taken at Griffith University, Brisbane, Australia in September 2022 by Dr. Ian Cock.

REFERENCES

- Cock IE. The phytochemistry and chemotherapeutic potential of *Tasmannia lanceolata* (Tasmanian pepper): A review. *Pharmacogn Commn.* 2013;3(4):13-25.
- Winnett V, Boyer H, Sirdaarta J, Cock IE. The potential of *Tasmannia lanceolata* as a natural preservative and medicinal agent: Antimicrobial activity and toxicity. *Phcog Commn.* 2014;4(1):42-52. doi: 10.5530/pc.2014.1.7.
- Cock IE, Winnett V, Sirdaarta J, Matthews B. The potential of selected Australian medicinal plants with anti-proteus activity for the treatment and prevention of rheumatoid arthritis. *Pharmacogn Mag.* 2015;11(Suppl 1);Suppl 1:S190-208. doi: 10.4103/0973-1296.157734, PMID 26109767.
- Winnett V, Sirdaarta J, White A, Clarke FM, Cock IE. Inhibition of *Klebsiella pneumoniae* growth by selected Australian plants: Natural approaches for the prevention and management of ankylosing spondylitis. *Inflammopharmacol.* 2017;25(2):223-35. doi: 10.1007/s10787-017-0328-1.
- Wright MH, Jay Lee CJ, Arnold MSJ, Shalom J, White A, Greene AC, et al. GC-MS analysis of *Tasmannia lanceolata* extracts which inhibit the growth of the pathogenic bacterium *Clostridium perfringens*. *Pharmacogn J.* 2017;9(5):626-37. doi: 10.5530/pj.2017.5.100.
- Vallette L, Rabadeaux C, Sirdaarta J, Davis C, Cock IE. An upscaled extraction protocol for *Tasmannia lanceolata* (Poir.) A.C. Sm.: Anti-bacterial, anti-giardial

- and anticancer activity. *Pharmacogn Commun.* 2016;6(4):238-54. doi: 10.5530/pc.2016.4.7.
7. Hart C, Ilanko P, Sirdaarta J, et al. *Tasmannia stipitata* as a functional food/natural preservative: Antimicrobial activity and toxicity. *Pharmacogn Commun.* 2014;4(4):33-47.
 8. Barillot C, Davis C, Cock IE. *Pseudowintera colorata* (Raoul) Dandy hydro-alcohol leaf extract inhibits bacterial triggers of some autoimmune inflammatory diseases. *Pharmacogn Commun.* 2017;7(4):164-71. doi: 10.5530/pc.2017.4.24.
 9. Rayan P, Matthews B, Mc Donnell PA, Edwin Cock I. Phytochemical analysis of *Tasmannia lanceolata* extracts and inhibition of *Giardia duodenalis* proliferation. *Phcogj.* 2016;8(3):291-9. doi: 10.5530/pj.2016.3.19.
 10. Jamieson N, Sirdaarta J, Cock IE. The anti-proliferative properties of Australian plants with high antioxidant capacities against cancer cell lines. *Pharmacogn Commun.* 2014;4(4):71-82.
 11. Cock IE. Medicinal and aromatic plants – Australia. Available from: <http://www.eolss.net>. In: *Ethnopharmacology, encyclopedia of life support systems (EOLSS)*. Vol. 2011. Oxford, UK: EOLSS Publishers; 2011. Developed under the auspices of UNESCO.
 12. Kalt FR, Cock IE. Gas chromatography-mass spectroscopy analysis of bioactive *Petalostigma* extracts: Toxicity, antibacterial and antiviral activities. *Pharmacogn Mag.* 2014;10(Suppl 1):S37-49. doi: 10.4103/0973-1296.127338, PMID 24914307.
 13. Kalt FR, Cock IE. The medicinal potential of Australian native plants from Toohey Forest, Australia. *S Pac J Nat App Sci.* 2010;28(1):41-7. doi: 10.1071/SP10003.
 14. Ilanko A, Cock IE. The interactive antimicrobial activity of conventional antibiotics and *Petalostigma* spp. extracts against bacterial triggers of some autoimmune inflammatory diseases. *Pharmacogn J.* 2019;11(2):292-309. doi: 10.5530/pj.2019.11.45.