Medicinal Plant Images

Ian Edwin Cock1,2, *
1Environmental Futures Research Institute, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland, AUSTRALIA.
2School of Natural Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland, AUSTRALIA.

Correspondence:
Dr. Ian Edwin Cock1,2
1Environmental Futures Research Institute, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.
2School of Natural Sciences, Nathan Campus, Griffith University, 170 Kessels Rd, Nathan, Brisbane, Queensland 4111, AUSTRALIA.

Phone no: +61 7 37357637
Email id: i.cock@griffith.edu.au
DOI: 10.5530/pc.2021.1.13

Figure 1: 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.1 Petalostigma pubescens 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.1 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.2,3 Interestingly, it has recently been reported that Petalostigma spp. extracts not only have inherent antibacterial activity, but they also contain synergising compounds that allow conventional antibiotics to function, even in bacterial strains otherwise resistant to their actions.4 This photograph was taken at Griffith University, Brisbane, Australia in November 2020 by Dr. Ian Cock.

Figure 2: Aloe is a genus of approximately 400 succulent plants, many of which are native to Africa. Plants of the genus Aloe have one of the longest recorded history of medicinal usage and are amongst the most widely used plants for traditional medicinal purposes worldwide. The Aloe has been used since ancient times, particularly for the treatment of microbial infections, gastrointestinal disorders and inflammatory conditions.5 Some Aloe spp. have also been used to treat fungal skin disease,6 bacterial7 and viral respiratory diseases,8 malaria,9 diabetes10 and parasite infestations.11 Aloe vera, Aloe ferox, Aloe arborescens and Aloe perryi are the best known and most widely used, although many other species are also used for their therapeutic properties. Despite their wide spread usage, studies from different laboratories often report wide variations in the therapeutic bioactivities from Aloe spp., with some studies reporting potent antibacterial activity,12,13 yet other studies reporting a complete lack of activity.14 Leaves from individual plants within the same species may have widely varying levels of the bioactive phytochemicals and thus wide variances in bioactivity. Phytochemical analyses have shown that many Aloe species contain various carbohydrate polymers (notably glucomannans) and a range of other low molecular weight phenolic compounds including alkaloids, anthraquinones, anthrones, benzene and furan derivatives, chromones, coumarins, flavonoids, pyrroles, pyrones.5 Intra and interspecies differences in the levels and redox states of the individual Aloe components (and in the ratios of these components) may affect the physiological properties of Aloe extracts.15 Due to the structure and chemical nature of many of the Aloe phytochemicals, it is likely that many of the reported medicinal properties are due to antioxidant or prooxidant effects. The antioxidant/prooxidant activities of many Aloe spp. phytochemicals depend not only on their individual levels, but also on the ratios between the various components and their individual redox states. Therefore, discrepancies between bioactivity studies are likely when using different crude mixtures. This photograph was taken in the Walter Sisulu Botanical Gardens, Johannesburg, South Africa by Dr. Ian Cock in 2019.
REFERENCES


