

Medicinal Plant Images

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Figure 1: *Eremophila macdonnelli* F. Muell. (Family: Scrophulariaceae) is an endemic Australian plant. Several *Eremophila* spp. have been used in traditional First Australian medicine to treat a wide variety of ailments.^{1,2} The genus consists of more than 200 species that grow in semi-arid and arid regions of Australia. Multiple *Eremophila* spp. are used as traditional medicines by the First Australians in the areas in which they grow to treat diverse conditions including uses as antibacterial, antifungal, antiviral, antioxidant, anti-diabetic, and anti-inflammatory therapies, as well as for their cardio-protective properties. The antibacterial properties of *Eremophila* spp. have been relatively well studied and the several bioactive terpenoids have been identified. This photograph was taken in the Australian Arid Lands Botanic Garden, Port Augusta, Australia, in January 2021 by Ian Cock



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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 Aloes have been used since ancient times, particularly for the treatment of microbial infections, gastrointestinal disorders and inflammatory conditions.³ Some *Aloe* spp. have also been used to treat fungal skin disease,⁴ bacterial⁵ and viral respiratory diseases,⁶ malaria,⁷ diabetes⁸ and parasite infestations.⁹ *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,^{10,11} yet other studies reporting a complete lack of activity.¹² 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, phytosterols, pyrans and pyrenes.³ 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.¹³ 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 by Dr Ian Cock in 2014.

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