

## Medicinal Plant Images

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**Figure 1:** Australian *Acacia* spp. The genus *Acacia* (family Fabaceae) is a large genus of more than 1200 trees and shrubs which are widely distributed throughout the world, with more than 700 species indigenous to Australia. The Australian species had multiple medicinal uses by indigenous Australians, including being used to treat diarrhoea and hyperglycemia<sup>1</sup> and as a general antiseptic agent<sup>2-5</sup>. Many Australian *Acacia* species have been reported to have antimicrobial, molluskicidal, antihypertensive and platelet aggregatory activities.<sup>1</sup> This photograph was taken at Griffith University, Australia in 2015 by Dr Ian Cock.



**Figure 2:** *Aloe arborescens* Mill. *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.<sup>6</sup> *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 widespread usage, studies from different laboratories often report wide variations in the therapeutic bioactivities from *Aloe* spp., with some studies reporting potent antibacterial activity,<sup>7,8</sup> yet other studies reporting a complete lack of activity.<sup>9</sup> 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.<sup>6</sup> 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.<sup>10</sup> 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 2018.

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