

Lifestyle & Culture

The medicinal marvel of *Carpobrotus edulis*: Nature's own remedy



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Carpobrotus edulis, commonly known as the sour fig or Hottentot fig, is a succulent plant native to South Africa. This hardy perennial is known for its fleshy leaves, vibrant flowers, and especially for its medicinal properties. Though often overlooked in favour of more mainstream medicinal plants, *Carpobrotus edulis* has a long history of use in traditional medicine, providing a natural remedy for various ailments. This article delves into the medicinal benefits of *Carpobrotus edulis*, exploring its historical uses, active compounds and potential applications in modern medicine.

Historical uses and traditional knowledge

Carpobrotus edulis has been utilised for centuries by indigenous communities in South Africa, particularly the Khoisan people. They valued the plant for its diverse medicinal properties, using it to treat a variety of conditions. The leaves and fruits of *Carpobrotus edulis* were commonly employed in folk medicine for their astringent, anti-inflammatory and antimicrobial properties. Traditional uses included treatments for digestive disorders, skin ailments and infections.

The juice extracted from the leaves was used to alleviate sore throats and mouth infections. It was also applied topically to wounds and burns to promote healing and prevent infection. The fruit, known for its tart flavour, was consumed to aid digestion and relieve constipation. These traditional practices laid the groundwork for modern scientific investigations into the plant's medicinal properties.

Active compounds and biological activities

The medicinal properties of *Carpobrotus edulis* can be attributed to its rich composition of bioactive compounds. The plant contains a variety of flavonoids, tannins, phenolic acids and alkaloids, each contributing to its therapeutic potential.

1. **Flavonoids:** Flavonoids are known for their antioxidant and anti-inflammatory properties. In *Carpobrotus edulis*, compounds such as quercetin and kaempferol have been identified. These flavonoids help neutralise free radicals, reduce oxidative stress and mitigate inflammation, making the plant beneficial for conditions



Photo: AI-generated image created by Prof. Blundell

like arthritis and inflammatory bowel disease.

2. **Tannins:** Tannins possess astringent properties, which can help in wound healing by promoting tissue contraction and reducing bleeding. They also exhibit antimicrobial activity, making them effective against a range of bacterial and fungal infections. This explains the traditional use of *Carpobrotus edulis* in treating wounds and skin infections.

3. **Phenolic Acids:** Phenolic acids, including gallic acid and caffeic acid, are potent antioxidants that protect cells from damage and support overall health. They also exhibit antimicrobial and anti-inflammatory effects, contributing to the plant's ability to treat infections and inflammatory conditions.

4. **Alkaloids:** Alkaloids are known for their pharmacological activities, including pain relief and antimicrobial effects. The presence of alkaloids in *Carpobrotus edulis* adds to its analgesic and antibacterial properties, supporting its use in traditional medicine for pain and infections.

Modern applications and research

Recent scientific studies have validated many of the traditional uses of *Carpobrotus edulis*, highlighting its potential in modern medicine. Here, we explore some of the key areas where the plant has shown promise:

1. **Antimicrobial Activity:** Studies have demonstrated that extracts of *Carpobrotus edulis* exhibit significant antimicrobial activity against a variety of pathogens. This includes bacteria such as *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa*, as well as fungi like *Candida albicans*. The antimicrobial properties of the plant make it a potential candidate for developing natural antibiotics and antifungal agents.

2. **Anti-inflammatory Effects:** The anti-inflammatory properties of *Carpobrotus edulis* have been confirmed through various in vitro and in vivo studies. The plant's extracts have been shown to reduce inflammation markers and alleviate symptoms of inflammatory diseases. This makes it a promising natural remedy for conditions like arthritis, inflammatory bowel disease and other chronic inflammatory disorders.

3. **Antioxidant Potential:** The antioxidant activity of *Carpobrotus edulis* is well-documented, with studies highlighting its ability to scavenge free radicals and protect cells from oxidative damage. This antioxidant capacity is crucial for preventing chronic diseases such as cancer, cardiovascular diseases and neurodegenerative disorders.

4. **Wound Healing:** Traditional knowledge about the wound-healing properties of *Carpobrotus edulis* has been supported by scientific research. The plant's extracts have been found to promote wound closure, reduce

inflammation and prevent infection. This supports its use in natural skincare products and topical treatments for wounds and burns.

5. **Digestive Health:** *Carpobrotus edulis* has been traditionally used to treat digestive issues, and recent studies support these claims. The plant's extracts have been shown to have gastro-protective effects, reducing gastric ulcers and promoting overall digestive health. This positions *Carpobrotus edulis* as a potential natural remedy for conditions like gastritis and peptic ulcers.

Integrating *Carpobrotus edulis* into modern medicine

The growing body of research on *Carpobrotus edulis* highlights its potential as a natural remedy for a range of health conditions. However, integrating this traditional medicinal plant into modern medicine requires a careful approach. Here are some considerations for its application:

1. **Standardisation and quality control:** To ensure the efficacy and safety of *Carpobrotus edulis*-based products, it is essential to standardise the extracts and establish quality control measures. This involves identifying and quantifying the active compounds, ensuring consistency across batches and minimising the presence of contaminants.

2. **Clinical trials:** While preclinical studies provide valuable insights, clinical trials are neces-

sary to confirm the therapeutic benefits of *Carpobrotus edulis* in humans. Rigorous testing will help determine the appropriate dosages, potential side effects and efficacy of the plant's extracts in treating specific conditions.

3. **Formulation development:** Developing effective and user-friendly formulations is crucial for the widespread adoption of *Carpobrotus edulis* in modern medicine. This includes creating topical applications, oral supplements and other delivery methods that maximise the bioavailability and therapeutic potential of the plant's compounds.

4. **Sustainable harvesting and cultivation:** As the demand for *Carpobrotus edulis* increases, it is essential to promote sustainable harvesting and cultivation practices. This ensures the long-term availability of the plant and protects natural populations from overexploitation. Cultivation practices should focus on maintaining genetic diversity and minimising the environmental impact.

5. **Ethnopharmacological integration:** Recognising and respecting the traditional knowledge of indigenous communities is crucial in the integration of *Carpobrotus edulis* into modern medicine. Collaborative efforts with these communities can provide valuable insights and promote equitable sharing of benefits arising from the commercialisation of the plant.

Conclusion

Carpobrotus edulis, with its rich history of traditional use and promising scientific evidence, stands out as a potent medicinal plant with a wide range of therapeutic benefits. From its antimicrobial and anti-inflammatory properties to its antioxidant and wound-healing potential, this succulent plant offers a natural remedy for various health conditions. As research continues to uncover its full potential, *Carpobrotus edulis* could play a significant role in the development of natural medicines and contribute to the growing field of ethnopharmacology.

The journey of integrating *Carpobrotus edulis* into modern medicine is an exciting one, promising new, nature-based treatments for ailments that have plagued humanity for centuries. By combining traditional knowledge with modern scientific research, we can unlock the full potential of this remarkable plant, paving the way for a healthier and more sustainable future.

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