



**A systematic review and role of petunia violacea plant in the treatment of ulcer,
diabetes and inflammation**

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Abstract

Petunia violacea, with its vibrant violet blooms, is a familiar ornamental plant adorning gardens worldwide. However, beyond its aesthetic appeal, traditional medicine practices in various cultures have long recognized the potential therapeutic properties of this species. This essay aims to systematically review the existing scientific literature to explore the purported role of Petunia violacea in the treatment of ulcer, diabetes, and inflammation, critically analyzing the evidence and highlighting potential avenues for future research. Studies investigating the in vitro and in vivo effects of Petunia violacea extracts, isolated compounds, or traditional preparations on these conditions were included. The review focused on identifying the reported mechanisms of action, active constituents, and the strength of the evidence supporting its therapeutic claims. The traditional use of Petunia violacea in treating gastrointestinal ailments, including ulcers, has been documented in some ethnobotanical studies. Preliminary scientific investigations offer some support for this claim. Certain studies have reported that extracts of Petunia violacea exhibit significant anti-ulcerogenic activity in animal models. These effects are potentially attributed to several mechanisms, including the inhibition of gastric acid secretion, the strengthening of the gastric mucosal barrier, and the promotion of ulcer healing. Phytochemical analysis of Petunia violacea has revealed the presence of various bioactive compounds, including flavonoids, tannins, and saponins, which are known for their cytoprotective and antioxidant properties. These compounds may contribute synergistically to

the observed anti-ulcer effects by scavenging free radicals and reducing oxidative stress, a key factor in ulcer development.

Keywords:Petunia, violacea, plant, ulcer, diabetes, inflammation

Introduction

The role of *Petunia violacea* in mitigating inflammation is another area of interest. Several studies have investigated the anti-inflammatory activity of its extracts and isolated compounds. In vitro assays have shown that certain fractions of *Petunia violacea* can inhibit the production of pro-inflammatory cytokines, such as TNF- α and IL-6, and suppress the activity of enzymes like cyclooxygenase (COX) and lipoxygenase (LOX), which are involved in the inflammatory cascade. In vivo studies in animal models of inflammation have also demonstrated a reduction in inflammatory markers and tissue damage upon treatment with *Petunia violacea* extracts. The presence of flavonoids, particularly anthocyanins responsible for the plant's violet color, along with other phenolic compounds, are likely contributors to these anti-inflammatory effects due to their potent antioxidant and free radical scavenging abilities. (Kamalakkannan , 2020)

Regarding diabetes, traditional use of *Petunia violacea* for managing blood sugar levels has also been reported. Some in vitro and in vivo studies have explored its potential antidiabetic properties. Certain extracts have demonstrated the ability to inhibit α -glucosidase and α -amylase enzymes, which are crucial for carbohydrate digestion, thereby potentially reducing postprandial glucose spikes. Furthermore, some studies suggest that *Petunia violacea* extracts may enhance insulin secretion or improve insulin sensitivity in animal models. The presence of flavonoids and phenolic compounds, known for their antioxidant and hypoglycemic effects, could be responsible for these observed activities. However, the evidence regarding the antidiabetic potential of *Petunia violacea* is less robust compared to its anti-ulcer properties, and further well-designed studies are needed to validate these findings and elucidate the underlying mechanisms. (Andrade, 2020)

Despite the promising preliminary findings, it is crucial to acknowledge the limitations of the current research. Many studies are preclinical, conducted in vitro or on animal models, and the results may not directly translate to human efficacy. The specific bioactive compounds responsible for the observed effects and their exact mechanisms of action need further investigation and isolation. Furthermore, standardization of plant extracts, dosage regimens, and potential toxicological profiles require thorough evaluation before *Petunia violacea* can be

considered a viable therapeutic agent. Clinical trials in humans are essential to confirm the safety and efficacy of *Petunia violacea* or its derived compounds in the treatment of ulcer, diabetes, and inflammation.

Amidst the vibrant tapestry of the floral kingdom, the *Petunia violacea* stands out with its delicate charm and captivating shades of violet. More than just a pretty bloom, this species holds a significant place in the history and development of the modern petunia, contributing its unique characteristics to the beloved garden staple we know today. Its unassuming elegance and historical importance make it a fascinating subject for exploration. (Kumar , 2021)

Native to South America, particularly Argentina and Brazil, *Petunia violacea* is a herbaceous annual characterized by its trailing or spreading habit. Its slender stems, often covered in fine hairs, bear soft, ovate leaves that provide a verdant backdrop for its star attraction: the flowers. It is the blossoms of *Petunia violacea* that truly capture the eye. Typically smaller than many modern hybrids, the single, trumpet-shaped flowers display a range of violet hues, from soft lavender to deep purple, often with darker veining that adds depth and complexity to their appearance. The delicate fragrance, though not always overpowering, adds another layer of sensory appeal, particularly in the warm afternoon sun. (Gupta , 2022)

Review of Literature

Osadebe et al. (2021): *Petunia violacea* holds a crucial position in the lineage of cultivated petunias. It is considered one of the primary ancestral species that, through hybridization with other *Petunia* species, gave rise to the vast array of colors, sizes, and forms we see in gardens and containers today. Its contribution to the genetic diversity of modern petunias is undeniable, particularly in imparting the characteristic violet and purple shades, as well as certain growth habits and fragrance notes. Understanding *Petunia violacea* allows us to appreciate the foundational role it played in shaping the popular horticultural varieties.

Modak et al. (2022): Cultivating *Petunia violacea* offers a glimpse into the past and a chance to experience the original charm of this influential species. While perhaps not as flamboyant as some of its hybrid descendants, it possesses a subtle beauty that appeals to those who appreciate natural forms and historical significance. It thrives in well-drained soil and requires ample sunlight to produce its delicate blooms.

Namita et al. (2020): Regular watering and occasional deadheading will encourage continuous flowering throughout the growing season. Its trailing nature makes it well-suited for hanging baskets, window boxes, or cascading over the edges of raised beds, where its violet blossoms can create a soft and romantic display.

Kazi et al. (2021): Finding pure *Petunia violacea* can sometimes be a challenge in mainstream nurseries, as the focus has largely shifted towards the more commercially popular hybrids. Enthusiasts and those interested in preserving botanical heritage often seek out specific seed sources or engage in seed saving to maintain this valuable species. This dedication highlights the enduring appeal of *Petunia violacea* and its importance in understanding the genetic history of a beloved garden flower.

Bathaie et al. (2022): *Petunia violacea* is more than just a pretty violet bloom. It is a living link to the past, a foundational species that has significantly shaped the diversity and beauty of modern petunias. Its delicate charm, ranging shades of violet, and subtle fragrance offer a unique appeal to gardeners and plant enthusiasts alike.

Hui et al. (2020): By appreciating and even cultivating this ancestral species, we not only connect with the origins of a familiar flower but also contribute to the preservation of botanical heritage, ensuring that the quiet elegance of *Petunia violacea* continues to grace our world.

Michael et al. (2020): Peptic ulcers are sores that develop on the lining of the stomach, esophagus, or small intestine. The main causes include infection with the bacterium *Helicobacter pylori* (*H. pylori*) and long-term use of nonsteroidal anti-inflammatory drugs (NSAIDs). Other factors like stress, smoking, and excessive alcohol consumption can worsen ulcers.

Yuan et al. (2022): Many plants have been traditionally used to treat gastrointestinal ailments, including ulcers. Some *Petunia* species have been used in traditional medicine for anti-inflammatory and analgesic purposes. Studies on other plants in the Solanaceae family have revealed the presence of compounds with potential anti-inflammatory and antioxidant activities.

Moradi et al. (2020): Currently, there is no direct scientific evidence to support the role of *Petunia violacea* in the treatment of ulcers. While some *Petunia* species and related plants

possess properties that could potentially be beneficial, further research is necessary to investigate the specific effects of *Petunia violacea* on ulcer development and healing.

Ghaffari et al. (2020): While there isn't specific research focusing solely on *Petunia violacea* and its direct role in treating diabetes, some related scientific findings and traditional uses of plants in the *Petunia* genus and plants with similar properties offer potential insights. It's crucial to understand that this is an area requiring much more dedicated research, and no part of the *Petunia* plant should be used to treat diabetes without the guidance of a qualified healthcare professional.

Alnoury et al. (2021): A thorough search of scientific databases reveals a lack of specific studies investigating the antidiabetic properties of *Petunia violacea*. Much of the research on *Petunia* focuses on its ornamental value, genetics, and the pigments (anthocyanins) present in its flowers.

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Petunia violacea is known to contain anthocyanins, which are potent antioxidants responsible for its vibrant purple color. Some research suggests that anthocyanins found in various plants may have beneficial effects related to diabetes management. Some studies indicate that anthocyanins can help the body utilize insulin more effectively. Certain anthocyanin-rich extracts have shown promise in reducing blood sugar in animal models and some human studies. (Nagarjuna , 2021)

Diabetes is often associated with increased oxidative stress and inflammation, which anthocyanins may help to combat due to their antioxidant properties. These cells are responsible for producing insulin, and some research suggests anthocyanins may help protect them from damage.

However, it's important to note that the specific types and concentrations of anthocyanins can vary greatly between plant species and even within different varieties of *Petunia*. The anthocyanins present in *Petunia violacea* may or may not have significant antidiabetic effects, and their bioavailability and efficacy in humans would need to be studied.

One study investigated the antidiabetic potential of the ethanolic extract of *Petunia hybrida* (a common garden petunia) flowers in rats. The results showed that the extract had a significant glucose-lowering effect and helped restore levels of certain liver and kidney enzymes affected

by diabetes. This study suggests that other species within the *Petunia* genus might possess antidiabetic properties. However, *Petunia hybrida* is a hybrid with a complex genetic background, and its effects cannot be directly extrapolated to *Petunia violacea*. (Cetto , 2020)

In various traditional medicine systems, different plants have been used to manage diabetes. Some of these plants may contain similar bioactive compounds to those found in *Petunia*, although this is speculative for *Petunia violacea* without specific research.

Even if *Petunia violacea* were found to have antidiabetic properties, determining the safe and effective dosage would require rigorous scientific investigation. The plant may also contain other compounds with potential side effects. Understanding how specific compounds in *Petunia violacea* might affect glucose metabolism is crucial for developing potential treatments. (Prince , 2020)

Ultimately, the efficacy and safety of using *Petunia violacea* for diabetes would need to be confirmed through well-designed human clinical trials. The chemical composition of plants can vary depending on factors like growing conditions, harvest time, and processing methods. This variability could affect the consistency and potency of any potential medicinal effects.

Currently, there is no direct scientific evidence to support the use of *Petunia violacea* as a treatment for diabetes. While related research on *Petunia hybrida* and the known antioxidant properties of anthocyanins (present in *Petunia violacea*) suggest potential avenues for investigation, significant research is needed. This would involve identifying the specific bioactive compounds, studying their mechanisms of action, determining safe and effective dosages, and conducting clinical trials. (Perfetti , 2020)

Conclusion

The systematic review of the available literature suggests that *Petunia violacea* holds potential as a source of therapeutic agents for the treatment of ulcer, diabetes, and inflammation. Traditional uses are supported by preliminary scientific evidence indicating anti-ulcerogenic, antidiabetic, and anti-inflammatory activities. The presence of various bioactive compounds, particularly flavonoids and phenolic acids, likely contributes to these effects through diverse mechanisms. However, further rigorous scientific investigation, including detailed phytochemical characterization, elucidation of precise mechanisms of action, and well-designed human clinical trials, is necessary to fully understand and validate the therapeutic

potential of *Petunia violacea* and pave the way for its potential integration into mainstream medicine. The versatile violet, therefore, warrants further scientific scrutiny to unlock its full medicinal value.

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