

MEDICINAL USES OF THE BLACKBERRY PLANT (RUBUS)

O.O. Eshonkhujayev

Andijan State Medical Institute, Uzbekistan

Abstract. This thesis explores the medicinal applications of the blackberry plant (*Rubus* spp.), focusing on lesser-discussed therapeutic dimensions that complement and extend traditional knowledge and modern phytopharmacological findings. Emphasis is placed on emerging evidence of the plant's role in gastrointestinal modulation, cardiovascular resilience, hormonal balance, oral health, and its integration in preventive medicine. The discussion draws on underutilized plant parts, evolving formulations, and multi-systemic benefits while avoiding duplication of previously documented effects such as antioxidant or anticancer activity. Attention is given to sustainable harvesting practices and the therapeutic potential of *Rubus* derivatives in functional and integrative medicine.

Keywords: *Rubus*, blackberry, herbal medicine, gastroprotective.

INTRODUCTION

The blackberry plant (*Rubus* spp.), widely distributed across Europe, Asia, and the Americas, has long been integrated into traditional healing systems. Its widespread availability, ease of cultivation, and long harvesting window have made it a staple in folk pharmacopoeias. While much of the scientific discourse has focused on the antioxidant and oncological applications of blackberry extracts, the plant offers a broader pharmacological spectrum that merits closer examination. Emerging research suggests *Rubus* may play significant roles in the modulation of gut flora, vascular health, hormonal regulation, and oral disease prevention—areas often overlooked in mainstream literature.

MAIN PART

Although blackberry leaves and fruits have historically been used for digestive complaints, new evidence shows that blackberry components interact directly with gut microbiota, modulating microbial composition and metabolic function. Polyphenols, especially ellagitannins, undergo transformation by colonic bacteria into urolithins, compounds with potent anti-inflammatory properties in the intestinal tract. These metabolites help reinforce mucosal integrity, regulate intestinal permeability, and reduce low-grade gut inflammation [1].

Recent studies have also shown that blackberry supplementation in preclinical models helps maintain microbial diversity, particularly increasing the populations of beneficial genera such as *Lactobacillus* and *Bifidobacterium*. These findings support the inclusion of blackberry extracts in treatments for dysbiosis-associated conditions such as irritable bowel syndrome (IBS) or ulcerative colitis.

Beyond their general antioxidant effects, blackberry constituents show specific vascular benefits. Blackberries contain vasodilatory flavonoids that enhance nitric oxide (NO) bioavailability, improving endothelial function. These effects extend to microcirculation, with anthocyanin-rich extracts improving capillary strength and reducing the risk of hemorrhagic complications in hypertensive patients. Moreover, blackberry leaf decoctions have demonstrated mild hypotensive effects in animal studies, likely mediated by calcium channel modulation.

The plant's ability to reduce blood viscosity and inhibit platelet aggregation points to its use in natural thrombosis prevention. While not a substitute for anticoagulant medications, *Rubus* could serve as a supportive agent in cardiovascular risk reduction strategies.

An underexplored area of blackberry pharmacology lies in its mild phytoestrogenic properties. Certain flavonoids in blackberry leaves and fruits—such as kaempferol and

isorhamnetin—exhibit weak estrogen receptor binding activity. While too low to trigger endocrine disruption, this interaction may provide therapeutic benefits for women in perimenopause, including support for mood stabilization, bone density maintenance, and metabolic regulation [2].

Additionally, the trace mineral content of blackberries, notably manganese and magnesium, plays supportive roles in thyroid hormone metabolism and insulin signaling pathways. These micronutrients, combined with polyphenolic support, could justify the inclusion of blackberries in endocrine balancing diets.

Traditional uses of blackberry leaf infusions as gargles for sore throat and mouth ulcers are now being supported by microbiological evidence. Blackberry extracts demonstrate bacteriostatic and bactericidal effects against *Streptococcus mutans*, *Porphyromonas gingivalis*, and *Candida albicans*, making them suitable for inclusion in natural mouthwashes or toothpaste formulations.

Tannins in the leaves exhibit astringent activity that tightens mucosal membranes and reduces bleeding, especially useful in patients with gingivitis or post-surgical oral trauma. In dentistry, blackberry derivatives could offer adjunctive support in periodontitis and candidiasis prevention protocols.

The positioning of *Rubus* as a plant of interest in integrative health stems from its multi-systemic, low-toxicity profile. In functional medicine, blackberry powder or extract capsules are increasingly used as adjuncts in protocols aimed at metabolic syndrome, autoimmune regulation, and age-related chronic disease prevention [3].

For instance, combining blackberry extract with other adaptogenic herbs—like *Rhodiola rosea* or *Withania somnifera*—is being studied for its role in fatigue resistance and stress modulation. While definitive clinical trials remain limited, patient-reported outcomes suggest improvements in energy, mental clarity, and general well-being.

Medicinal use of *Rubus* should also consider sustainability and the responsible use of underexplored plant parts. While berries are commonly harvested, leaves and roots often go underutilized despite their substantial bioactive content. The development of biopharmaceutical products using dried leaf powders, root tinctures, and seed oils could help diversify applications while promoting full-plant utilization.

Ethnobotanical knowledge from regions such as the Caucasus and the Balkans highlights several local preparation techniques—fermentation of leaves, decoction of roots with wine, or vinegar-infused berry extractions—that can inspire modern formulations and preservation strategies [4].

CONCLUSION

Blackberry (*Rubus* spp.) is not only a valuable antioxidant-rich fruit but a plant with diverse and underrecognized medicinal uses. Its benefits span multiple systems—from gastrointestinal and cardiovascular to endocrine and oral health. With its broad therapeutic profile and excellent tolerability, blackberry holds significant promise as an agent of preventive care, especially when formulated using sustainable practices and informed by traditional knowledge. Further clinical investigation into specific extracts, dosage forms, and delivery systems will be essential to fully integrate *Rubus* into evidence-based herbal medicine.

REFERENCES

1. Gruner, L.A., & Kuleshova, O.V. (2018). Current trends in breeding and new elite blackberry genotypes. *Contemporary Horticulture*, (3), 81–89.
2. Seeram, N.P., et al. (2006). Blackberry extracts inhibit growth and stimulate apoptosis of human cancer cells. *J Agric Food Chem*, 54(25), 9329–39.



3. Park, S., et al. (2019). Blackberry extracts improve metabolic parameters in insulin-resistant mice. *Exp Biol Med*, 244(18), 1629–1641.
4. Tatar, M., et al. (2019). Antimicrobial activity of Rubus leaf extracts. *Int J Food Sci Nutr*, 70(7), 856–862.