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Ayurvedic Insights into Nigella Seeds: Molecular and Phytochemical Exploration of Their Antioxidant and Antibacterial Potentials

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Nigella seeds, traditionally known in Ayurveda as Krishna Jiraka, have long been valued for their therapeutic properties in promoting vitality and balancing bodily energies. This study integrates molecular taxonomy and phytochemical analysis to explore the health benefits of Nigella species, with a focus on their antioxidant and antibacterial potential. Using molecular identification techniques, genetically diverse Nigella species were classified, revealing rich biodiversity that supports their traditional use in holistic medicine. Phytochemical profiling uncovered a wide range of bioactive compounds, including flavonoids, alkaloids, and essential oils, which are associated with rejuvenative and antimicrobial effects in Ayurvedic practice. These findings highlight the seeds' potential in enhancing immunity, preventing microbial infections, and contributing to integrative health approaches. By bridging traditional Ayurvedic knowledge with modern scientific validation, the study advocates for the sustainable cultivation and therapeutic application of Nigella seeds. Furthermore, it emphasizes the importance of conserving medicinal plant biodiversity and integrating indigenous wisdom into contemporary health sciences. This research contributes to global efforts in promoting natural remedies and supports the inclusion of Ayurvedic botanicals in evidence-based healthcare systems.

Keywords: Antioxidant, Antibacterial, Ayurveda, Nigella seeds, Medicinal plant conservation

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