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Evaluation and Variations of Phytochemicals in *Justicia Adhatoda* L. Leaves: A Potent Source of Bronchodilator Medicine

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ABSTRACT

Bronchodilators are a type of medication that make breathing easier by relaxing the muscles in the lungs and widening the airways (bronchi). They are often used to treat long-term conditions where the airways may become narrow and inflamed. Fluctuations in environmental conditions with varying altitudinal gradients account for variations in plants. This study was performed to scrutinize the impact of varying altitude on medicinal plant viz., *Justicia adhatoda* L. for two consecutive years. The plant is known for its bronchodilator properties. It is known to modulate the inflammation, thrombosis, and fibrosis to reduce lung injury. It helps in dealing with respiratory complications which in turn are associated with issues like COVID-19. Phytochemical and biological investigation were undertaken on ethanolic extracts of the leaves and root bark of *Justica adhatoda L.*

Objective: Altitudinal variations in phytochemicals of *Justicia adhatoda* L. leaves: a bronchodilatory medicine.

Method: Spectrophotometric determination

Results and Conclusion: The therapeutic efficacy of medicinal plants is influenced by their biochemical composition, which in turn depends on the environment in which they grow. Significant variations were observed among phytochemicals across different elevations that showed plant chemically adapted itself to various altitudes in order to sustain by exhibiting change in its phytochemical aspects. The assessment of biochemical composition of medicinal plants growing at different elevational sites can contribute to selecting the best genotype and better altitude for commercial cultivation of medicinal plants.

Keywords: COVID-19, phytochemicals, bronchodilatory, spectrophotometric determination, *Justicia adhatoda Linn*.

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