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# Comprehensive Pharmacognostic and Phytochemical Analysis of Select Indian Herbs: In Vitro Anti-oxidant Assessment

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**Abstract:** *This groundbreaking study aims to thoroughly investigate specific Indian herbs, including Giloy, Black Pepper, Amla, Ginger, Cinnamon, and Basil leaves, using a systematic evaluation of their medicinal properties and analysis of their chemical components. The study involves the methodical gathering, conservation, and extraction of these herbs using solvents with different polarity to determine their physicochemical properties. The moisture content, ash value, acid-insoluble ash, water-soluble ash, and water and alcohol-soluble extractive values were accurately measured to gain important information about the quality characteristics of these herbs. In addition, initial phytochemical analyses using various identification assays identified a wide range of components in the extracts, including as alkaloids, glycosides, tannins, resins, flavonoids, steroids, amino acids, proteins, carbohydrates, fats & oils, phenols, diterpenes, and saponins. Furthermore, the research examined the antioxidant capabilities of a poly-herbal extract obtained from these herbs in a laboratory setting. It clarified the extract's effectiveness in neutralising free radicals by conducting DPPH and ABTS assays. Significantly, the poly-herbal extract had antioxidant activity that increased in proportion to its concentration, as indicated by larger scavenging percentages at increasing concentrations. The extract also exhibited a significant overall antioxidant capacity, suggesting its potential in counteracting free radicals and addressing oxidative stress. Moreover, this study resulted in the creation of rapidly dissolving tablets enhanced with these herbs, demonstrating a new method for using their immunomodulatory capabilities. This study's findings emphasise the varied phytochemical composition of the chosen Indian herbs, as well as their promising antioxidant capabilities and suitability for medicinal use. This research enables further investigations into the precise bioactive compounds found in these herbs, providing valuable knowledge for their use in pharmacological, nutraceutical, or therapeutic formulations. This contributes significantly to the field of herbal medicine and the development of drugs based on natural products.*

**Keywords:** Comprehensive pharmacognostic analysis, phytochemical evaluation, antioxidant assessment, Indian herbs, bioactive compounds, medicinal plants, therapeutic potential.

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