


Chapter 11

Elucidating Phytochemicals and Folklore Constituents for Multitargeted Disease Mitigation

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ABSTRACT

This chapter delves into the fascinating intersection of folk medicine and modern pharmacology, focusing on plant-based remedies used in traditional healing practices for tackling multiple diseases. It highlights the importance of ecochemical interface

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studies, exploring how factors like climate, soil, and pollution affect the effectiveness of medicinal plants. By combining traditional knowledge with contemporary scientific approaches, the chapter uncovers the full potential of plant compounds for multitarget disease treatments. Topics covered include phytochemical profiling, pharmacodynamics, and how environmental stress impacts plant chemistry. Through real-life case studies, we see how specific plants have proven therapeutic effects, underscoring the value of cross-disciplinary collaboration and ethical sourcing. The chapter concludes by calling for future research that bridges eco-centric drug discovery with personalized medicine, leveraging innovative tools such as AI and systems biology to fully realize the therapeutic promise of natural compounds.

1.0 INTRODUCTION

Folklore plants such as *Phyllanthus amarus*, *Loranthus micranthus*, and *Securidaca longipedunculata* exemplify the intersection of indigenous wisdom and modern pharmacological validation. While Adam et al. (2024) confirm *P. amarus* efficacy against liver disorders and malaria, the reliance on herbal combinations complicates attribution of therapeutic effects to specific phytochemicals. This highlights a methodological limitation: disentangling synergistic versus independent actions is essential for reproducibility and clinical translation.

Similarly, Hlophe and Bassey (2023) emphasize *L. micranthus* in managing cancer and hypertension. However, Adewole et al. (2022) demonstrated host-dependent phenolic variation, showing that plants growing on cocoa trees had higher bioactivity than those on cashew trees. While this underscores environmental modulation of phytochemical potency, the absence of clinical correlation limits its translational relevance. Future studies must integrate ecological monitoring with pharmacological trials to establish consistent therapeutic outcomes.

Shai et al. (2024) reported antimicrobial and anti-inflammatory properties of *S. longipedunculata*, but their findings remain largely preclinical. Without dosage standardization or toxicity profiling, claims of potency risk being overstated. This reflects a broader challenge in ethnopharmacology: while traditional use provides valuable leads, translational pipelines remain underdeveloped.

Overall, these examples illustrate both the promise and limitations of folklore plants. Evidence supports their bioactivity, yet methodological gaps such as lack of standardized dosing, ecological variability, and limited clinical validation which restrict their integration into modern therapeutic frameworks. Bridging these gaps requires interdisciplinary approaches that combine ethnobotanical knowledge with pharmacological rigor. Nigerian indigenous plants hold cultural and scientific promise for future pharmaceutical innovation (Illustrated in Figure 1).

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