

Combined use of medicinal plants and conventional medicines: risks and bioethical dilemmas in patients with chronic diseases

Uso combinado entre plantas medicinales y medicamentos convencionales: riesgos y dilemas bioéticos en pacientes con enfermedades crónicas

Martin Benjamín Pérez Maranto¹, Odette Islas Avila², Claudia Solano Pérez³, Josefina Reynoso Vázquez⁴

Abstract:

Bioethics is an essential component of modern healthcare, particularly in the management of chronic diseases such as arterial hypertension and type 2 diabetes mellitus. In Mexico, these conditions show high prevalence and frequently coexist with traditional practices such as the use of medicinal plants. The combined use of herbal medicine and conventional drugs may generate clinical risks and relevant bioethical dilemmas, especially when professional supervision is lacking. This article analyzes, from a bioethical perspective, the main risks associated with this practice and the principles of autonomy, beneficence, non-maleficence, and justice involved, highlighting the role of healthcare professionals in providing safe and culturally sensitive guidance.

Keywords:

bioethics; herbal medicine; hypertension; type 2 diabetes mellitus; herb-drug interactions

Resumen:

La bioética constituye un componente esencial de la atención sanitaria moderna, especialmente en el abordaje de enfermedades crónicas como la hipertensión arterial y la diabetes mellitus tipo 2. En México, estas patologías presentan una alta prevalencia y coexistencia con prácticas tradicionales como el uso de plantas medicinales. El uso combinado de fitoterapia y medicamentos convencionales puede generar riesgos clínicos y dilemas bioéticos relevantes, particularmente cuando no existe supervisión profesional. Este artículo analiza, desde una perspectiva bioética, los principales riesgos asociados a esta práctica, así como los principios de autonomía, beneficencia, no maleficencia y justicia implicados, destacando el papel del personal de salud en la orientación segura y culturalmente sensible del paciente.

Palabras Clave:

bioética; fitoterapia; hipertensión; diabetes mellitus tipo 2; interacciones medicamento-planta

INTRODUCTION

Bioethics is an essential component of modern health care, although it is often underestimated or unknown in clinical practice. However, providing a quality health service involves not only applying scientific knowledge, but also considering the patient's individual values, beliefs, and circumstances. Quality

to preserve health with respect for the autonomy, traditions, economic limitations and personal convictions of each individual. In this sense, bioethics allows therapeutic decisions, including those related to the use of medicinal plants or traditional therapies, to be made under a framework of respect, communication and shared responsibility between the patient and the health professional¹.

The high prevalence of hypertension and diabetes transcends the clinical to become an economic, social and ethical problem²³.

The human aspect of the medical act lies in balancing the duty

¹ Universidad Autonoma del Estado de Hidalgo | Instituto de Ciencias de la Salud | Pachuca-Hidalgo | <https://orcid.org/0009-0000-3962-2024>, Email: fuhs197@gmail.com

² Universidad Autonoma del Estado de Hidalgo | Instituto de Ciencias de la Salud | Pachuca-Hidalgo | <https://orcid.org/0009-0002-4222-0194> Email: nunu.2001@hotmail.com

³ Universidad Autonoma del Estado de Hidalgo | Instituto de Ciencias de la Salud | Pachuca-Hidalgo | <https://orcid.org/0000-0003-4648-981X>, Email: claudia_solano@uaeh.edu.mx

⁴ Autor de correspondencia | Universidad Autonoma del Estado de Hidalgo | Instituto de Ciencias de la Salud | Pachuca-Hidalgo | <https://orcid.org/0000-0002-9943-0881>, Email: jreynoso@uaeh.edu.mx

Inadequate management of these pathologies generates complications that raise care costs, reduce quality of life, and disproportionately affect vulnerable populations⁴. In this context, phytotherapy represents a paradox: it is a valuable and ancestral cultural practice, but its unregulated use constitutes a health and ethical risk⁵. The structural deficit of communication between patients and professionals, added to the lack of training in phytotherapy within the health sector, has allowed fundamental bioethical principles to be violated¹⁶.

The objective of this article is to analyze from a bioethical perspective the use of medicinal plants in combination with conventional drugs in the treatment of chronic diseases such as hypertension and type 2 diabetes mellitus in Mexico⁴. The epidemiological relevance of these diseases, their definition and the scope of phytotherapy within conventional medicine will be addressed, in addition to an in-depth analysis of the bioethical principles involved in this practice¹⁷. The ultimate goal of this article is for health personnel to guide patients safely and ethically, always respecting their cultural autonomy without neglecting their safety¹⁸.

DEVELOPMENT

High blood pressure (HBP) and type 2 diabetes mellitus (T2DM) represent two of the greatest challenges for health systems worldwide²³. The World Health Organization (WHO) defines hypertension as a condition in which the blood vessels have persistent high blood pressure, which can damage not only the blood vessels themselves, but also other tissues and organs². Diabetes is a metabolic disease characterized by elevated blood glucose levels that over time leads to serious damage to the heart, blood vessels, eyes, kidneys, and more³.

In Mexico, the rate of patients with at least one of these diseases is really alarming⁴. The most recent data from the National Health and Nutrition Survey (ENSANUT 2023) indicate a national prevalence of 47.8% for high blood pressure and 18.3% for DM2⁴. These figures reflect a high burden of disease in the population and a significant impact on the quality of life of millions of Mexicans, currently being the main causes of death in the country⁵.

MEDICINAL PLANTS: CULTURAL AND THERAPEUTIC CONTEXT

The World Health Organization (WHO) defines medicinal plants as any plant species that contains substances or active ingredients with therapeutic activity in any of its organs⁶. Its use, known as phytotherapy, is a pillar of traditional Mexican medicine, especially rooted in the country's cultural roots⁷. It is estimated that between 60% and 80% of the population has used them at least once⁷.

These customs are especially notable in states such as Hidalgo, where the use of medicinal plants is part of the traditions of indigenous communities⁸.

The use of medicinal plants as a complementary therapy for hypertension and DM2 is so widespread and normalized that health personnel should presume that the patient uses them looking for a more "natural" alternative, accessible or as a treatment enhancer, according to their traditions⁷. Many of these

plants have preliminary or traditional scientific backing⁸⁻¹¹.

1. Nopal (*Opuntia ficus-indica*): recent studies and reviews suggest a potential hypoglycemic effect attributable to fiber and antioxidant compounds¹⁰.
2. Jamaica (*Hibiscus sabdariffa*): reviews and meta-analyses indicate mild antihypertensive effect in some clinical trials⁹.
3. Garlic (*Allium sativum*): Recent reviews show evidence of mild blood pressure reduction and effects on platelet aggregation¹¹.

However, the belief that medicinal plants are harmless because they are "natural" represents a mistake that can compromise the patient's health¹². Risks include inappropriate doses, contamination, variability in the concentration of active compounds, and especially the possibility of drug interactions with conventional drugs^{7,12-14}.

The literature and reviews on herb-drug interactions highlight the complexity of clinical evidence and the need for pharmacovigilance and clinical communication systems to mitigate risks^{7,13}.

This situation underscores the need for a deeper analysis of the scientific evidence, potential interactions, and associated clinical challenges.

Phytotherapy has historically been used as a complement in the management of chronic diseases such as high blood pressure and type 2 diabetes mellitus. In Mexico, its use is deeply rooted in the health culture, which favors a considerable number of patients to combine medicinal plants with conventional pharmacological treatments. This therapeutic coexistence poses potential opportunities, but also clinical risks that require critical analysis.

Various plants have shown relevant physiological effects. *Hibiscus sabdariffa* has demonstrated modest reductions in systolic blood pressure in several clinical trials; however, the studies show variability in dose, dosage form and duration of treatment. Similarly, *Allium sativum* has been associated with hypotensive effects linked to bioactive sulfur compounds; however, the bioavailability of these compounds depends on the processing and storage of the product.

In the case of *Opuntia ficus-indica*, its hypoglycemic effect seems to be related to its content of soluble fiber, mucilage and phenolic compounds that delay intestinal absorption of glucose and improve insulin sensitivity. Despite these findings, most of the available studies have small sample sizes and short follow-up periods, which limits extrapolation of results to broad populations.

Methodological heterogeneity is one of the main limitations of the current evidence. The lack of standardization in the concentration of active ingredients and the variability between commercial presentations make it difficult to establish universal clinical recommendations. In addition, many trials lack direct comparisons with conventional treatments or have open-label designs, which increases the risk of bias.

From a pharmacodynamic point of view, the combination of medicinal plants with antihypertensives or antidiabetics can generate additive or synergistic effects that increase the risk of hypotension or hypoglycemia. The concomitant use of garlic with angiotensin-converting enzyme inhibitors, for example, could

potentiate blood pressure reduction beyond the intended therapeutic target. In pharmacokinetic terms, some plant compounds could influence cytochrome P450 enzymes or intestinal transporters, modifying plasma concentrations of conventional drugs. Although mechanistic evidence is still limited in humans, these potential mechanisms underpin the need for active clinical surveillance.

Another critical element is the quality of the herbal product. Unlike conventional medicines, control and pharmacovigilance systems for products of plant origin may be less rigorous, which favors variability in therapeutic potency and underreporting of adverse events. Possible contamination with heavy metals, pesticides or microorganisms poses an additional risk. In this context, the pharmacist plays a strategic role in the comprehensive evaluation of the patient's therapy, the identification of potential interactions and evidence-based health education.

From a bioethical perspective, the integration of phytotherapy and pharmacotherapy requires a balanced analysis. The principle of autonomy recognizes the patient's right to actively participate in decisions related to their treatment, including the use of medicinal plants. However, genuine autonomy requires sufficient, clear and evidence-based information available. The omission of warnings about possible interactions or risks violates both autonomy and the principle of non-maleficence.

The principle of non-maleficence implies avoiding foreseeable damage. If the health professional is aware of the possibility of a clinically relevant interaction and does not conduct targeted questioning about the use of herbal products, he or she may incur an ethical omission. Integrating specific phytotherapy questions within the history should be considered standard clinical practice in patients with chronic diseases.

Likewise, the principle of justice takes on special relevance in contexts where traditional medicine is part of cultural identity. Automatically dismissing these practices can generate distrust towards the health system and favor the concealment of the use of herbal products. An ethically and culturally competent approach proposes dialogue between knowledges, prioritizing patient safety without invalidating their therapeutic worldview.

Professional responsibility is not limited to prescribing conventional treatments, but encompasses the comprehensive evaluation of all substances consumed by the patient. Documenting the use of medicinal plants in the clinical record strengthens continuity of care and reduces risks associated with therapeutic duplication. Similarly, informed consent should explicitly contemplate the possibility of interactions with herbal products in patients with hypertension and diabetes.

BIOETHICS: PRINCIPLES AND THEIR RELATIONSHIP WITH PHYTOTHERAPY

Bioethics arises as a response to the need to analyze the moral dilemmas posed by advances in the life sciences and health¹. It provides a principled framework to guide human conduct in this area, ensuring that scientific progress does not come at the expense of human dignity and the well-being of communities¹.

The four principles of bioethics, according to Beauchamp and Childress, are: autonomy, beneficence, nonmaleficence and justice¹.

Relationship with the use of medicinal plants. The unsupervised

use of medicinal plants directly impacts these principles:

1. Violated autonomy: the patient's decision is not truly autonomous if it lacks truthful information about interaction and safety risks¹².
2. Beneficence vs. risk: the professional cannot fulfill his duty if he is unaware of the patient's complete therapeutic regimen, including phytotherapy¹³.
3. Nonmaleficence: Lack of professional supervision can lead to preventable harm¹⁰¹³.
4. Social justice: vulnerable populations (rural/indigenous) make more use of these therapies and tend to have less access to information and services, which constitutes ethical inequity⁸¹⁶.

A paradigmatic example of pharmacokinetic interaction is the inhibition or induction of cytochrome P450 (CYP) enzymes, responsible for the metabolism of more than 50% of drugs. For example, the extract of *Hypericum perforatum* (St. John's wort) is a potent inducer of CYP3A4, which can drastically decrease the plasma concentrations of drugs such as simvastatin or some calcium antagonists (e.g. nifedipine), compromising their therapeutic efficacy. Although this example is not of the plants mentioned, it illustrates the underlying mechanism that could occur with other species and justifies the need for thorough questioning by the health professional

The unsupervised use of medicinal plants has a direct impact on these principles¹. The patient shares responsibility for adherence, but health professionals have an ethical and legal duty to ensure that they have the information they need to make decisions freely¹. This commitment implies a thorough understanding of your complete therapeutic regimen, including medications, supplements, and plants, since ignoring it makes it impossible to comply with the principle of beneficence and alters the benefit-risk balance of the treatment¹.

Likewise, the absence of professional supervision can generate preventable damage, violating the principle of non-maleficence¹². Pharmaceutical and medical support is essential to prevent interactions, toxicity or therapeutic abandonment¹⁴. Finally, vulnerable populations, especially rural or indigenous communities, maintain a close relationship with traditional medicine, but have limited access to scientific information and health services, placing them at an ethical disadvantage⁸¹⁶. This inequality is evidence of a violation of the principle of justice, perpetuating gaps in safety, health education and equity in access to safe treatment¹⁶.

CONCLUSION

The integration between phytotherapy and conventional pharmacological treatment in patients with arterial hypertension and type 2 diabetes mellitus is a frequent clinical reality, especially in Latin American contexts and vulnerable populations⁴⁶¹⁶. Although several plants such as *Allium sativum*, *Opuntia ficus-indica* and *Hibiscus sabdariffa* have shown potential effects on cardiometabolic parameters⁹¹⁰¹¹, the variability in dose, product quality and methodological design limits the generalizability of their results.

Recent evidence confirms that herb-drug interactions can generate additive effects, antagonists or alter the pharmacokinetics of oral antihypertensives and antidiabetics¹²¹³¹⁴, which increases the risk of adverse events in the absence of professional supervision. In this sense, the role of the pharmacist

is positioned as strategic to detect, prevent and educate regarding possible risks associated with the concomitant use of complementary therapies¹⁵.

From the bioethical framework, patient autonomy must be respected as long as it is accompanied by clear and evidence-based information¹. Non-maleficence requires active vigilance in the face of possible interactions, while justice requires reducing information gaps that mainly affect rural and indigenous communities^{8,16}. In addition, current regulatory and normative strategies seek to strengthen the quality and safety of herbal products^{18,19}, aligning with international guidelines for the responsible integration of traditional medicine into health systems¹⁷.

Consequently, the rational integration of phytotherapy should not be understood as an opposition to conventional medicine, but as a field that requires regulation, rigorous research and continuous professional accompaniment. Only through an interdisciplinary, ethically grounded and scientifically sound approach will it be possible to guarantee safety, efficacy and equity in the comprehensive management of prevalent chronic diseases.

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