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COMMENTARY

The Role of Herbal Medicines in Postoperative and Anesthesia Care: Opportunities, Challenges, and Future Research Directions

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Abstract

With increasing public and scientific interest in herbal medicines, emerging evidence suggests that certain herbal compounds may serve as adjunct therapies to reduce postoperative pain and manage inflammation. These approaches have the potential to improve patient experience, reduce healthcare costs, and shorten hospital stays. However, strong clinical evidence is still limited since most studies are small, preclinical, or animal-based, and data on optimal dosing, timing, long-term safety, pharmacological effects, and drug interactions in surgical patients are insufficient. Some herbal compounds may interact with anesthetics, anticoagulants, antihypertensives, or analgesics, potentially posing risks if used without proper guidance. Effective evaluation requires multidisciplinary collaboration among surgeons, anesthesiologists, and clinical pharmacists, as well as education for healthcare teams and patients to improve knowledge, promote informed decision-making, and raise awareness of potential adverse effects. Key research opportunities include randomized controlled trials on postoperative outcomes, pharmacological and toxicological studies to determine mechanisms and safe dosages, drug-herb interaction assessments, and long-term multicenter investigations to evaluate real-world efficacy and safety. Rigorous, evidence-based research is essential to support the safe inclusion of herbal medicines in perioperative care.

Keywords: Complementary Therapies, Herbal Medicines, Patient Education, Perioperative Care, Postoperative Pain, Safety

Highlights

Growing interest in herbal medicines

Early evidence suggests that certain herbal compounds may be used alongside traditional treatments to reduce postoperative pain and inflammation, with clinical research ongoing.

Limited clinical evidence

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Most current studies are small, preclinical, or animal-based, providing insufficient data on optimal dosing, long-term safety, and drug interactions in surgical patients.

Potential herb-drug risks

Some herbal compounds may interact with anesthetics, anticoagulants, antihypertensives, or analgesics, and using them without guidance could pose safety risks.

Need for multidisciplinary collaboration

Assessing herbal effects requires cooperation among surgeons, anesthesiologists, and clinical pharmacists, along with education for healthcare teams and patients to maximize efficacy and minimize risks.

Research opportunities

Well-designed clinical trials, pharmacological and toxicological studies, drug-herb interaction evaluations, and long-term multicenter studies are crucial for safety and evidence-based integration of herbal medicines into perioperative care.

Commentary

Dear Editor,

With the growing public and scientific interest in herbal medicines and natural products, evidence has emerged that certain herbal compounds may serve as adjunct therapies to reduce postoperative pain and control inflammation. Clinical investigations are underway, and reviews indicate potential benefits in pain management alongside conventional care [1,2]. These findings can improve patient care and experience, while also lowering healthcare costs and reducing hospital stays.

However, despite the promising potential of herbal medicines, strong and well-controlled clinical evidence remains limited. Most current studies are limited to small sample sizes, preclinical research, or animal models, and there is insufficient information about the optimal dosage, timing, long□term safety, drug interactions, and pharmacological effects in surgical patients [3,4]. Some herbal compounds may interact with anesthetic agents, anticoagulants, antihypertensives, or analgesic medications, and uninformed use could pose significant risks.

Moreover, evaluating the effects of herbal medicines in postoperative care requires multidisciplinary collaboration among surgeons, anesthesiologists, and clinical pharmacists. Well-designed clinical trials that adhere to ethical and scientific standards, along with high-quality data collection, are crucial to enabling the safe and effective use of these compounds. Additionally, educating healthcare teams and informing patients about the benefits and limitations of herbal therapies plays a key role in minimizing risks and increasing efficacy, as effective educational interventions have been shown to increase knowledge, decision□making skills, and awareness of potential side effects related to complementary medicines [5].

Given these challenges, there are several research opportunities available:

- Randomized controlled clinical trials to assess the effects of herbal medicines on postoperative pain, inflammation, and complications.
- Pharmacological and toxicological studies to establish safe dosages and understand mechanisms of action.
- Drug-herb interaction studies to evaluate potential interactions with anesthetics or commonly used systemic medications.
- Long-term and multicenter studies to assess real-world clinical outcomes and sustainability across diverse patient populations.

Given the growing importance of herbal and complementary approaches in postoperative and anesthesia care, we believe that rigorous, ethical research in this area can improve the quality of

surgical care, enhance patient safety, and optimize the postoperative experience. We hope that these points will draw the attention of the scientific and clinical community to comprehensive, multidisciplinary investigations, paving the way for the safe and evidence-based integration of herbal medicines into surgical and anesthetic practices.

Sincerely yours,

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Conflict of Interest

The authors declare that they have no conflicts of interest related to the publication of this manuscript.

Author Contributions

All authors contributed to the conception and design of the manuscript, literature review, analysis and interpretation of the available evidence, drafting and critical revision of the manuscript, and approval of the final version for publication. All authors agree to be accountable for the content of the work and ensure the integrity and accuracy of the presented information.

Ethics Statement

This study was a narrative review of previously published literature and did not involve human participants, animals, or the collection of new experimental data. Therefore, ethical approval was not required.

Data Availability Statement

No new datasets were generated or analyzed during this study. All information discussed in this review was obtained from previously published and publicly available sources.

Artificial Intelligence Statement

Artificial intelligence (AI)-based tools were not used for data generation, analysis, or interpretation. If AI-assisted tools were used for language refinement or improving manuscript readability, the final content was carefully reviewed and verified by all authors, who remain fully responsible for the scientific accuracy and integrity of the manuscript.

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