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## REVIEWER'S REPORT

Manuscript No.: IJAR-56263

Title: Endodontic Irrigation: From Current Concepts to Future Innovations

### Recommendation:

Accept after major revision .....

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality			✓	
Clarity			✓	
Significance		✓		

Reviewer Name: Dr. Sudheer Aluru

### Detailed Reviewer's Report

This manuscript presents a broad narrative overview of endodontic irrigation, encompassing conventional irrigants, advanced formulations, activation systems, and emerging technologies. The topic is timely, clinically relevant, and appropriate for a scientific journal. The authors have clearly invested considerable effort, and the breadth of literature covered is a strength.

However, in its current form, the manuscript requires major revision. Significant concerns related to reference accuracy, structural organization, lack of critical synthesis, internal inconsistencies, and uneven scientific depth must be addressed before the work can be considered for publication. At present, the article reads more as an extensive descriptive compilation than as a critically synthesized review expected at this journal level.

### Major Comments

1. The manuscript alternates between narrative description and language suggestive of systematic or umbrella reviews, yet no review methodology is described. The authors should clearly define the article as a narrative review and briefly outline how the literature was selected. Additionally, the manuscript should avoid implying systematic rigor unless formal systematic methods are applied.
2. Although a wide range of irrigants and activation systems is discussed, much of the content is **descriptive rather than analytical**. For a journal, greater emphasis on critical synthesis is expected.

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- Specifically, the manuscript would benefit from:
- Clear differentiation between **in vitro, ex vivo, and clinical evidence**
- Discussion of why **conflicting results** exist in the literature
- Explicit identification of **knowledge gaps** rather than general statements that “more research is needed”

3. The manuscript would benefit from improved structural coherence. Several concepts are repeated across sections, including:

- Challenges associated with *Enterococcus faecalis* biofilms
- Limitations of conventional irrigants
- Mechanisms of action of nanoparticles and herbal agents

Reorganizing the manuscript into clearly defined sections and reducing redundancy would substantially improve readability and focus.

4. Some sections (e.g., passive ultrasonic irrigation and laser-activated irrigation) are detailed and well developed, while others (e.g., QMix, calcium hydroxide, reactive solutions) are comparatively brief. Additionally, the distinction between **primary irrigants, final rinse solutions, and intracanal medicaments** is not consistently clear.

A more uniform depth of discussion and clearer clinical categorization are recommended.

5. Several statements suggest strong efficacy or clinical superiority without sufficient contextualization. While short-term outcomes (e.g., bacterial reduction, postoperative pain) are well described, long-term outcomes such as periapical healing are later acknowledged to be inconclusive.

The manuscript would benefit from:

- Aligning early claims with later evidence
- Moderating language where clinical evidence is limited
- Clearly distinguishing **short-term procedural benefits** from **long-term treatment outcomes**

### Specific Suggestions for Improvement

- Quantify key claims where possible (e.g., degree of bacterial reduction, pain outcomes)
- Specify clinically relevant parameters (e.g., EDTA concentration and contact time)
- Distinguish between laboratory biofilm models and clinical polymicrobial infections
- Present comparative summaries as **tables rather than extended text**
- Include all figures referenced in the text

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### Language and Presentation

The manuscript contains several long, complex sentences, minor grammatical issues, and inconsistent terminology. Careful language editing would improve clarity and conciseness. Reducing overall length by approximately **20–30%** would strengthen the manuscript.

### Conclusion and Recommendation

This manuscript addresses an important topic with broad literature coverage and clear clinical relevance. However, improvements in structure, critical synthesis, and clarity are necessary before publication. With focused revision addressing the points outlined above, the manuscript has good potential to make a useful contribution to the endodontic literature.