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REVIEWER'S REPORT

Manuscript No.: **IJAR-52562** Date: 02-07-2025

Title: COMPARATIVE EVALUATION OF HERBAL IRRIGANTS ON MICROHARDNESS OF DENTIN- AN IN VITRO STUDY

Recommendation:
Accept as it is .....YES.....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*) .....

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

Reviewer Name: Dr Aamina

Reviewer's Comment for Publication.

Overall Evaluation:
This manuscript explores an emerging area in endodontic therapy by investigating the effect of various herbal irrigants on dentin microhardness. The study is well-conceived and addresses an important concern in contemporary dentistry—finding biocompatible and effective alternatives to synthetic irrigants. The manuscript offers empirical data that contributes to the expanding field of herbal applications in dental procedures.

Strengths:

1. **Topical Relevance**:
   The study addresses a timely and significant research question regarding the biocompatibility and mechanical effects of endodontic irrigants. With increasing concerns about antibiotic resistance and cytotoxicity of conventional irrigants, exploring herbal alternatives is both necessary and progressive.
2. **Structured Experimental Design**:
   The methodology is clearly described and appropriately controlled. The use of freshly extracted human premolars, standardized sectioning, polishing protocol, and immersion period ensures experimental consistency. The use of six groups allows a comprehensive comparison between traditional and herbal irrigants.
3. **Effective Use of Vickers Microhardness Testing**:
   The selection of the Vickers hardness test provides an accurate and accepted method to assess changes in dentin microstructure. The consistent load and dwell time, along with measurement across coronal, middle, and apical thirds, enhances the reliability of the findings.
4. **Diverse Herbal Comparison**:
   Inclusion of four different herbal agents—Triphala, Green Tea, Neem, and Tulsi—broadens the

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scope of the investigation. It allows for a comparative understanding of their individual impact on dentin properties, which is particularly valuable for future clinical application.

5. **Clear Results and Ranking**:
   The results are clearly summarized, with Chlorhexidine showing the most reduction in microhardness, followed by the herbal agents. This ranking provides clarity and indicates the relative conservativeness of each irrigant on dentin structure.
6. **Conservative and Realistic Conclusion**:
   The conclusion remains within the boundaries of the data presented and appropriately acknowledges the limitations of the in vitro setting. The finding that herbal agents exhibit a milder impact on dentin microhardness is clinically relevant and cautiously interpreted.
7. **Comprehensive Introduction**:
   The introduction lays a solid foundation by discussing the clinical importance of irrigants, limitations of current chemical agents, and the rationale for exploring herbal alternatives. The literature references underscore the scientific grounding of the study.

Conclusion:
This study presents a valuable contribution to endodontic research by evaluating the effects of herbal irrigants on dentin microhardness. The experimental rigor, clinical relevance, and comparative insight into biocompatible alternatives make this manuscript a worthwhile reference for both researchers and practicing endodontists. The data support the safe use of certain herbal irrigants without significantly compromising dentin structure.