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RESEARCH ARTICLE

IS TRIPHALA A NATURAL ALTERNATIVE TO CHLORHEXIDINE MOUTHWASH

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ABSTRACT

"Triphala" is among the most common formulas used in Traditional Ayurvedic Medicine. This preparation is composed of three equal proportion of herbal fruits: Terminalia chebula, Phyllanthusemblica, and Terminalia belerica.Triphala has been proven to have antibacterial, antiviral, and antifungal actions. It is also said to possess antihistamine, anti inflammatory, antioxidant, antitumor, blood pressure lowering, cholesterol lowering, digestive, diuretic, and laxative properties. Chlorhexidine, a cationic bisbiguanide with a very broad antimicrobial spectrum is the most widely used over the counter mouth rinse. The major advantage of chlorhexidine over most other compounds lies in its substantivity. However; chlorhexidine has several side effects, such as Staining and taste alteration, which limit its long term use. Therefore, chlorhexidine is used as a positive control in many clinical trials of new mouth rinse formulations and is considered the gold standard. The aim of this review is to evaluate the efficacy of triphala and chlorhexidine mouth rinse against dental plaque, gingival inflammation, and microbial growth.

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INTRODUCTION

Today's dentists are practicing in an era where the patients are more concerned about both their oral health and their overall medical wellbeing. Thus, in the midst of growing evidence of the connection between oral health and whole body health, herbal medicines with their 'naturally occurring' active ingredients offer a gentle and enduring way for restoration of health by the most trustworthy and least harmful way. (Ranjan Malhotra *et al*., 2011) Herbal medicine is both promotive and preventive in its approach. The major strength of these natural herbs is that their use has not been reported with any side-effects till date. (Ranjan Malhotra *et al*., 2011) "*Triphala*" is among the most common formulas used in Traditional *Ayurvedic* Medicine. This preparation is composed of three equal proportion of herbal fruits: *Terminalia chebula*, *Phyllanthusemblica*, and *Terminalia belerica*.Triphala has been proven to have antibacterial, antiviral, and antifungal actions. It is also said to possess antihistamine, anti-inflammatory, antioxidant, antitumor, blood pressure lowering, cholesterol lowering, digestive, diuretic, and laxative properties. Chlorhexidine, a cationic bisbiguanide with a very broad antimicrobial spectrum is the most widely used over the counter mouth rinse. The major advantage of chlorhexidine over most other compounds lies in its substantivity. (Van Leeumen *et al*., 2011) However; chlorhexidine has several side effects, such as Staining and taste alteration, which limit its long term use. (Flotra *et al*., 1971) Therefore, chlorhexidine is used as a positive control in many clinical trials of new mouth rinse formulations and is considered the gold standard. (Van Leeumen *et al*., 2011) Systematic reviews have rapidly gained an important place in aiding clinical decision making in medicine, although dentistry has been somewhat slower to adopt this approach. The objective of a systematic review is to provide a comprehensive and contemporary appraisal of research using transparent methods while aiming to minimize bias. If such conditions are met, there should be greater confidence in the conclusions of the review than in other summaries of clinical evidence. (Needleman, 2002) To our knowledge, there is no systematic review available that has evaluated comparisons of triphala mouth rinse to a chlorhexidine mouth rinse. The aim of this review is to evaluate the efficacy of triphala and chlorhexidine mouth rinse against dental plaque, gingival inflammation, and microbial growth.

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MATERIALS AND METHODS

Focused question

What are the effects of triphala as a mouthwash in comparison with chlorhexidine on dental plaque, gingivalinflammation, and microbial growth?

Quality assessment of the studies analysed

Quality criteria		STUDY			
		I	II	III	IV
Internal validity	Random allocation	yes	yes	yes	yes
	Allocation concealment	?	?	?	?
	Blinded to patient	yes	yes	yes	yes
	Blinded to examiner	yes	yes	yes	yes
	Blinding during statistical analysis	no	no	yes	yes
	Balanced experimental groups	yes	yes	yes	yes
	Reported loss to follow up				
	No. of dropouts (%)	4.66%		8.52%.	
	Treatments identical except for intervention	yes	yes	yes	yes
	External validity Representative population group	yes	yes	yes	yes
	Eligibility criteria defined	yes	yes	yes	yes
Statistical validity	Sample size calculation and power				
	Point estimates				
	Measures of variability presented for the primary outcome				
	Include an intention-to-treat analysis				
	Authors' estimated risk of bias				
	Levels of evidence (…)				

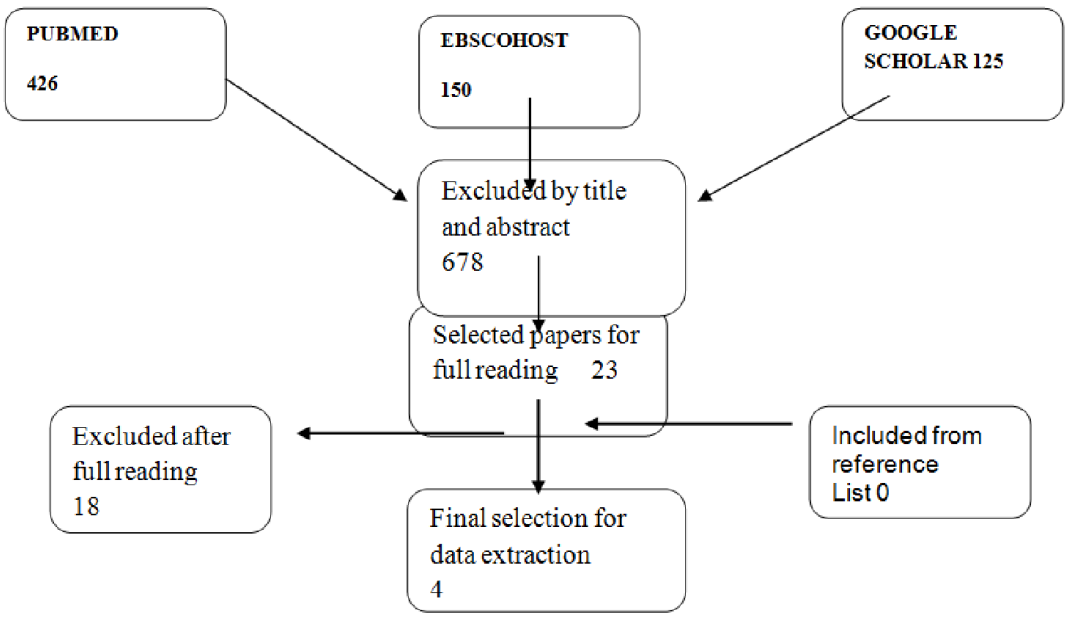
Intervention: Triphala mouth rinse

Comparison: Chlorhexidine mouth rinse

Clinical parameters: Plaque scores, bleeding scores, gingivitis scores, probing pocket depth, periodontal attachment level.

Overview of the studies that were excluded

Reason for rejection	Author(s), (year)
Systematic review on herbal products other than triphala	N.Nagappan, joseph john 2012
Not compared with chlorhexidine	D.k maurya.1997
Measures the anti-diabetic and anti-obesity effects.	Kamali Seyed Hamid 2013
In -vitro study	Jagadish 2009
In-vitro study compared with toothpaste	Biju Thomas 2011
In -vitro study	Mehta K 1993
There is no standardization of materials procedure	Anupama Desai 2010



No.	Author (year)	Title	Design & evaluation period	No. of subjects age	Intervention group Control group	Clinical Parameter	Outcome of the study
1	ShobhaTandon et al. 2010	Effect of Triphala mouthwash on the caries status	RCT parallel study, double blind 9 months	1501 8-12 years	Triphala 0.6% Chlorhexidine 0.1% Distilled water	Incipient Carious lesions DMFS, microbiological analysis (*Streptococcus* and lactobacilli counts).	no signifi cant difference between the *Triphala*and the chlorhexidine mouthwashes.
2	NeetiBajaj et al. 2011	The effect of Triphala and Chlorhexidine mouthwash on dental plaque, gingival inflammation, and microbial growth	RCT Double blind, parallel study 9 month	1431 8-12 years	Triphala 0.6% Chlorhexidine 0.1% Distilled water	Plaque scores, gingival scores, and microbiological analysis (*Streptococcus* and lactobacilli counts).	no significant Difference between the *Triphala*and the *Chlorhexidine* mouthwash.
3	Jyotsna Srinagesh et al. 2011	Assessment of Antibacterial Efficacy of Triphala Against Mutans Streptococci – A Randomised Control Trial	RCT double blind. Parallel study 45 days	57 18-25 years	6% triphala 0.2% chlorhexidine	DMF scores and incipient lesion scores. Mutans streptococci (MS) were cultured.	The antimicrobial action of triphala against mutans streptococci closely parallels that of chlorhexidine
4	Jyotsna Srinagesh et al. 2012	Antibacterial efficacy of triphala against oral streptococci: An *in vivo* study	RCT double blind. Parallel study 7 days	60 18-25 years	6% triphala 0.2% chlorhexidine	DMFT streptococci colony forming units/ml (CFUs/ml) was assessed	The reduction in CFUs/ml seen in triphala group closely paralleled that of chlorhexidine group.

Search strategy

Three internet sources of evidence were selected for this study Pub Med, Google scholar, Ebscohost. All the databases were searched for studies from their earliest records until September 2012. All reference lists of the selected studies were screened for additional papers that could meet the eligibility criteria of this study. The search was designed to include any published study that evaluated the effect oftriphala and chlorhexidine mouthwash on oral micro-organism. In the first step, the following keywords and search patterns were used: chlorhexidine, triphala, oral micro-organism. The search was intended to select clinical trials with CHX and triphala mouthwash. In the second step the following inclusion criteria were applied.

Eligibility criteria

The eligibility criteria were:

- Randomized controlled clinical trials (RCTs)
- Controlled clinical trials (CCTs)
- Conducted in humans:
- Good general health (no systemic disorders)
- In-vivo studies
- Studies relevant to the objective of this review.
- Language of publication comprehensible by the reviewer

The included articles were reviewed in depth and excluded according to the following criteria

- In vitro studies
- Animal studies
- Case reports, letters and narrative reviews were excluded from the search.

Screening and selection

The papers were screened independently by two reviewers, first by title and abstract. If the search keywords were present in the title, the abstract was selected for reading. Papers without abstracts but with titles suggesting that they were related to the objectives of this review were also selected so that the full text could be screened for eligibility. The full-text papers were read in detail by two reviewers. Those papers that fulfilled all selection criteria were processed for data extraction. Any disagreement between the reviewers was resolved with additional discussion.

If disagreementpersisted, the judgment of a third reviewer was decisive. Two reviewers hand-searched the reference lists of all included studies for additional articles. Only papers written in English were accepted. Case reports, letters and narrative ⁄ historical reviews were not included in the search.

Conclusion

Triphala play role in preventing the development of incipient lesions, 0.6% Triphalaand 0.1% chlorhexidine are comparable in preventing increase in the caries status. Shobhatondan 0.6% Triphalaand 0.1% Chlorhexidine have an inhibitory effect on plaque, gingivitis, and growth of Streptococcus mutansand Lactobacillus, but triphala showed better result against lactobacillus and both Triphalaand Chlorhexidine have shown similar effecton gingival health neetibajaj. Triphala and chlorhexidine showed bacterial reductions of 80% and 65% at 15 and 45 days, respectively srinagesh 2011. The triphala group showed a 17% and 44% reduction, while the chlorhexidine group showed 16% and 45% reduction at the end of 48 h and 7 days 2012. Both the study showed similar results, the antibacterial action of triphala closely parallels that of the 'gold standard' chlorhexidine.

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