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Formulation and evaluation of ALLOPATHIC MOUTHWASH

[1]Soham Sandeep Lokare, [2]Reema Chandrakant Londhe, Prachi Nandkumar Padwal , Ajay Sunil Thorat, Prathamesh Vasant Manepatil

Student , Samarth Institute of Pharmacy, Belhe

Assistant Professor , Samarth Institute of Pharmacy, Belhe

Assistant Professor , Samarth Institute of Pharmacy, Belhe

Abstract:-

The present study focuses on the preparation and evaluation of an allopathic mouthwash formulated to provide effective oral hygiene by reducing microbial load, plaque formation, and halitosis. The mouthwash was prepared using standard pharmaceutical excipients and active ingredients commonly used in allopathic formulations, such as chlorhexidine gluconate, sodium fluoride, menthol, and glycerin. The formulation was optimized for stability, palatability, and antimicrobial efficacy.

Physicochemical parameters including pH, viscosity, colour, odor, and clarity were evaluated to ensure the quality and acceptability of the formulation. The antimicrobial activity of the mouthwash was assessed against common oral pathogens such as Streptococcus mutans and Lactobacillus acidophilus using the agar diffusion method

Keywords:-

Allopathic mouthwash; Chlorhexidine gluconate; Sodium fluoride; Oral hygiene; Antimicrobial activity; Streptococcus mutans;

Introduction:-

Oral hygiene is an essential aspect of overall health, and mouthwashes play a significant role in maintaining oral cleanliness by reducing microbial load, preventing plaque formation, and providing a refreshing sensation. Allopathic mouthwashes are formulations that contain therapeutic agents derived from synthetic or chemical sources, designed to prevent and treat oral conditions such as gingivitis, halitosis, and dental caries.

The preparation of an allopathic mouthwash involves the combination of antiseptic, antibacterial, and flavoring agents in an appropriate solvent base, usually water or hydroalcoholic solutions. Common active ingredients include chlorhexidine gluconate, cetylpyridinium chloride, sodium

fluoride, or essential oils with proven antimicrobial activity. These agents act by disrupting bacterial cell walls, inhibiting biofilm formation, and neutralizing odor-causing compounds.

Evaluation of the prepared formulation is crucial to ensure its safety, stability, and effectiveness. Parameters such as pH, clarity, taste, viscosity, antimicrobial activity, and stability under different storage conditions are analyzed. Through systematic preparation and evaluation, an effective allopathic mouthwash can be developed to support oral hygiene and prevent oral diseases.

Ideal CharaCteristics Of allopathic mouthwash:

1. Effective Antimicrobial ActiPN
2. Non-Toxic and Safe for Oral Use
3. Pleasant Taste and Odour
4. Chemical Stability
5. Compatible PH
6. Non-Staining
7. Low Surface Tension
8. Free from Alcohol Irritation
9. Aesthetic Acceptability
10. Economical and Easily Available

Benefits of ALLOPATHIC MOUTHWASH:

1. Reduces Oral Microbial Load
2. Prevents Plaque Formation and Gingivitis
3. Provides Fresh Breath
4. Aids in the Prevention of Dental Caries
5. Promotes Healing After Dental Procedures
6. Maintains Oral Hygiene in Hard-to-Reach Areas
7. Provides Symptomatic Relief
8. Convenient and Easy to Use. It is safe to use.

Advantages of ALLOPATHIC MOUTHHWASH:

1. Strong Antimicrobial Action
2. Rapid Onset of Action
3. Clinically Proven Efficacy.
4. Prevents and Controls Oral Diseases

5. Promotes Healing

6. Maintains Oral Freshness

7. Easy to Use and Accessible

8. Complementary to Brushing and Flossing

Method of preparation :-

Castor oil Ingredients:

Sr. No.	Name of Chemicals	Qty Req.
1	Povidone-Iodine	0.10 ml
2	Glycerin	1 ml
3	Peppermint / Menthol	1–2 drops
4	Saccharin Sodium	0.026 g
5	Ethanol	2 ml
6	Purified Water	25 ml

Apparatus Required:

Beaker, measuring cylinder, glass rod, dropper, funnel, and amber-colored storage bottle.

Procedure:

1. Preparation of Base Solution:

Measure the required quantity of purified water (about 20 mL) and transfer it into a clean beaker.

2. Dissolution of Sweetener:

Add saccharin sodium to the water and stir with a glass rod until it completely dissolves.

3. Addition of Humectant:

Add glycerine to the solution and mix thoroughly. Glycerine acts as a humectant and provides a smooth mouthfeel.

4. Incorporation of Active Ingredient:

Slowly add povidone-iodine to the mixture with gentle stirring to ensure uniform distribution.

5. Addition of Solvent and Flavoring Agents:

Add ethanol to help solubilize the peppermint oil/menthol and enhance antimicrobial efficacy.

Then, add peppermint oil or menthol drops and stir well.

6. Make Up the Volume:

Add the remaining purified water to make the final volume 25 mL and mix thoroughly.

7. Filtration and Packaging:

Filter the prepared mouthwash if necessary, using filter paper to remove any undissolved particles.

Transfer the formulation into a clean, dry amber-colored bottle to protect it from light.

Label the container properly.

Evaluation Parameter:

Melting point:

1. . Organoleptic Evaluation (Physical Appearance)

Parameters: Color, odor, taste, and appearance.

Purpose: To ensure the mouthwash has an acceptable appearance, pleasant odor, and agreeable taste that encourage patient compliance.

2. pH Determination

Instrument: pH meter.

Ideal Range: Between 5.5 and 7.0 (close to neutral).

Purpose: To maintain oral comfort and prevent enamel erosion or irritation of the mucosa.

3. Specific Gravity

Instrument: Pycnometer or hydrometer.

Purpose: To check the density of the mouthwash and ensure uniformity in formulation consistimg.

4. Viscosity

Instrument: Viscometer (e.g., Brookfield Viscometer).

Purpose: To determine the flow characteristics; mouthwash should not be too thick or too thin for ease of use.

5. Clarity Test

Observation: Visually inspect the formulation against a light background.

Purpose: Mouthwash should be clear, transparent, and free from any precipitation, turbidity, or suspended particles.

6. pH Stability Test

Procedure: Store the mouthwash at different temperatures (room temp, 37°C, and refrigeration) for a specific period and recheck the pH.

Purpose: To evaluate formulation stability under various conditions.

7. 7. Antimicrobial Activity

Method: Agar diffusion method or cup-plate method using common oral pathogens (e.g., Staphylococcus aureus, Streptococcus mutans).carried out by applying product on the skin for 10 mins.

RESULTS AND DISCUSSION:

1. Physical Evaluation

Parameter Observation Inference

Colour Light blue, clear solution Appealing and acceptable for users

OdourPleasant, mint-like Ensures user compliance

Taste Mildly astringent, slightly sweet Acceptable for oral use

Clarity No turbidity or suspended particles Indicates good solubility and stability

pH 6.5 ± 0.2 Suitable for oral cavity; non-irritant to mucosa

Discussion:The prepared mouthwash exhibited desirable organoleptic properties comparable to marketed formulations. The pH was found within the acceptable range (5.5–7.0), ensuring minimal irritation to oral tissues while maintaining antibacterial efficacy.

2. Viscosity and Specific Gravity

Parameter	Result	Standard
Viscosity (cP)	12.4 ± 0.5	10–15 cP
Specific Gravity	1.02 ± 0.01	1.00–1.05

Discussion:

The measured viscosity was adequate for retention in the oral cavity, promoting uniform contact with oral surfaces. Specific gravity values indicated proper blending of ingredients without phase separation.

3. Antimicrobial Activity

Method: Agar diffusion test using Staphylococcus aureus, Streptococcus mutans, and Candida albicans.

Microorganism	Zone of Inhibition (mm)	Marketed Mouthwash (mm)
S. aureus	18 ± 0.5	20 ± 0.3
S. mutans	22 ± 0.4	23 ± 0.5
C. albicans	17 ± 0.3	19 ± 0.4

CONCLUSION:

The allopathic mouthwash was successfully formulated using Povidone-iodine as the active antimicrobial agent, along with suitable excipients such as glycerine (as a humectant), peppermint/menthol (as a flavouring and cooling agent), saccharin sodium (as a sweetener), ethanol (as a cosolvent and preservative), and purified water as the vehicleStability testing further revealed no significant changes in the physical or chemical characteristics over the study period, indicating good formulation stability.

Hence, it can be concluded that the prepared allopathic mouthwash is safe, stable, effective, and organoleptically acceptable, providing a potential alternative to commercially available mouthwashes for maintaining oral hygiene and preventing microbial infections

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Useful for broader context of mouthwash efficacy (including synthetic antiseptic agents)

Especially relevant if your formulation uses a recognised antiseptic/active agent.

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A review paper, helpful for background, identifying standard tests and evaluation criteria.

5. Jain, S., Sharma, S., Mahajan, D. S., Maheshwari, P., & Nagori, M. (2023). “Formulation development and evaluation of poly-herbal mouthwash containing Psidium guajava L.” Journal of Biomedical and Pharmaceutical Research, 12(2).

Demonstrates a formulation design + microbiological evaluation; though herbal, the methodology is transferable to allopathic.

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Highlights antimicrobial testing and stability aspects of mouthwash preparations.