The Formulation and invitro Evaluation of Oregano Toothpaste

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***Abstract*— our research has successfully integrated the strengths of four natural wonders – oregano oil, eggshell powder, neem bark powder, and wheat grass powder – to create a toothpaste that redefines oral care. This innovative formulation harnesses the collective potential of these natural ingredients, yielding a toothpaste that outperforms conventional products in antimicrobial efficacy. In vitro tests revealed remarkable inhibition zones, affirming the formulation's potency against oral pathogens. The unique blend of abrasive, anti-inflammatory, and antioxidant properties makes this toothpaste a comprehensive oral care solution. By synchronizing ancient wisdom with modern science, we have created a sustainable and effective alternative to conventional toothpastes. This research pioneers a new frontier in natural oral care, offering a promising solution for the modern world**

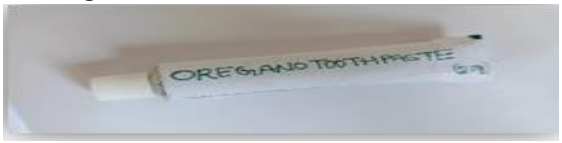
keywords: Antimicrobial, Neem bark, Oregano oil, wheat grass.

INTRODUCTION

Oral health is a vital aspect of our overall well-being, and the search for effective and natural ingredients to promote healthy teeth and gums continues to grow. Oregano, a plant renowned for its antimicrobial and anti-inflammatory properties, offers a promising solution. In addition, Neem bark, known for its antibacterial and anti-inflammatory properties, has been used in traditional medicine for centuries to maintain oral health. Wheatgrass, rich in antioxidants and essential vitamins, has been shown to reduce plaque and gingivitis. Eggshell powder, a natural source of calcium, has been added to enhance tooth strength and remineralization. This study aims to formulate and evaluate a toothpaste combining the synergistic benefits of oregano, Neem bark, wheatgrass, and eggshell powder, harnessing the potential of these natural ingredients to prevent oral diseases and promote a healthy smile. By assessing the physical, chemical, and microbiological properties of the formulated toothpaste, this research seeks to contribute to the development of a novel, effective, and eco-friendly oral care product."

PROCEDURE

Take the needed amount of water, add the tragacanth powder, and heat in a water bath to form a gel. Using a weighing machine, weigh each ingredient. All of the herbal ingredients were added to the mortar. Using a weighing machine, weigh all of the ingredients, including the fine powder of eggshell is utilized as a calcium carbonate source, with one teaspoon containing 1000-1200 mg of calcium carbonate. sodium lauryl sulphate, and glycerin, to create a solution. Add gum tragacanth and stir well. This solution is blended with herbal substances. Finally, add preservatives, honey, and flavoring agents. Using a pestle, mix all of the ingredients. The substance was then carefully mixed with water using a pestle before being transferred to a toothpaste container with clear labelling.



A. Table

Introduction	Role
Oregano oil	Anti-fungal activity
Wheat grass powder	Anti-bacterial activity
Neem bark powder	Anti-inflammatory activity
Egg shell powder	Abrasive
Glycerine	Humectant
Sodium chloride	Abrasive
Sodium lauryl sulphate	Surfactant
Nimb	Preservative
Menthol	Flavouring agent
Honey	Sweeting agent
Gum tragacanth	Binding agent
Water	vehicle

Table 1 formulation of oregano toothpaste

- Evaluation test for lab made toothpaste and commercial toothpaste

Table 2 Evaluation results

Properties	Lab made	Miswak
Determination of homogeneity	Good	Good
Determination of hard- and sharp-edged abrasive particles	Absent	Absent
Determination of spread ability	5.2	5.0
Determination of fineness	0.48	0.37
Determination of pH	7.5	7.3
Determination of foaming power	68	74
Determination of moisture and volatile matter	1.6	1.6
Determination of stability study	Good	Good
Determination of tube inertness	No corrosion	No corrosion
Determination of storage stability	Not observed	Not observed
Determination of shape retention	Maintained	Maintained
Fragrance test	Good	Good

- Anti-microbial activity test for oregano toothpaste

Test organisms	Zone of inhibition	Minium inhibition concentration (µg/ml)
Staphylococcus aures	21.8±1.2	75±1.5
Escherichia coli	14.8±0.9	125±0.9

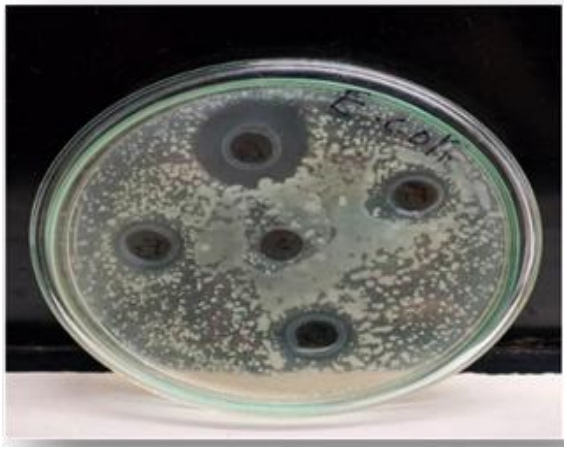


Fig 1 inhibition zone increased by formulation against *Escherichia coli* (gram negative bacteria)

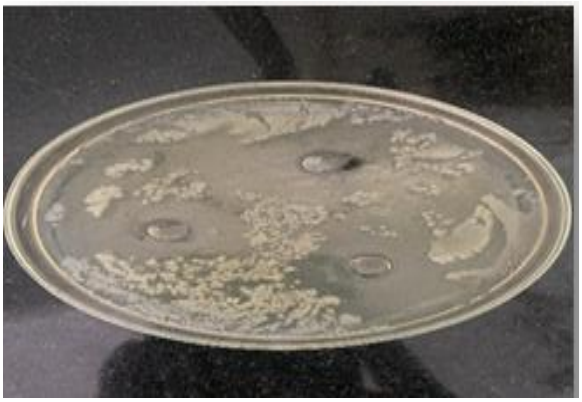


Fig 2 inhibition zone increased by formulation against *staphylococcus aures* (gram positive bacteria)

- Anti-fungal activity for oregano toothpaste

Test organisms	zone of inhibition (mm)	Minimum inhibitory zone (µg/ml)
Candida Albicans	20.0±0.5	125±1.0

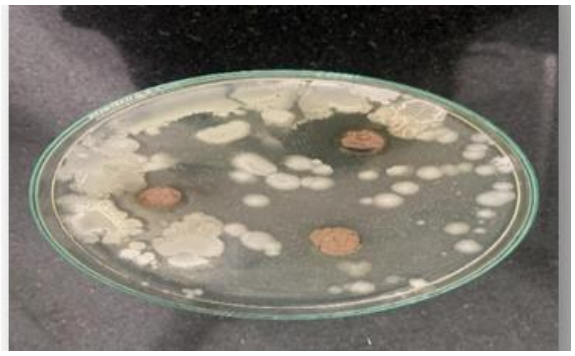


Fig 3 inhibition zone increased by formulation against *candida albicans* (gram positive bacteria)

CONCLUSION

In the quest for a healthy smile, herbal toothpastes have emerged as a game-changer in maintaining oral hygiene and freshness. By harnessing the power of nature, these toothpastes prevent tooth decay and cavities, promoting a radiant grin. In a groundbreaking feat, our lab has successfully crafted an herbal toothpaste that rivals commercial counterparts in stability and efficacy, leveraging the potent properties of Miswak. When pitted against commercial herbal toothpastes, our lab-made creation held its own, meeting the stringent standards of the Bureau of Indian Standards. In vitro investigations revealed that our lab-made toothpaste is a force to be reckoned with, demonstrating comparable excellence in all aspects.

This breakthrough lab-made herbal toothpaste is a testament to innovation, offering a high-quality, effective, and natural solution for an oral health.

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