



International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Formulation and Evaluation of Herbal Mouth Ulcer Gum.

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ABSTRACT:-

Chewing Gum Is A Mobile Drug Delivery System. It Is Potentially Use For Administrating Drugs Either Locally Or Systematically Via, The Oral Cavity. Herbal Chewing Gum Has Through The Year Gained Increased Acceptance As A Drug Delivery System. Several Ingredients Are Now Incorporated In Herbal Chewing Gum Herbal Medicine Is Still The Spine Of About 80%Of The Ecosphere's People, For Key Health Care Because Of Healthier Culture Suitability, Better Compatibility With Human Frame And Lesser Side Effects. Herbal Medicines Consist Of Plant Or Its Part To Treat Wounds, Sickness Or Infection And Use To Prevent And Treat Ulcer. Aim Of Present Study Was To Investigate Herbal Formulation Containing The Extract Of Fresh Tender Leaves Ocimum Sanctum (Tulsi), Curry Leaves & Rhizome Of Curcuma Longa Was Use For Anti-Ulcer Activity. Using Herbal Constituent Preapare Mouth Herbal Ulcer Gum. Medicated Chewing Gum Has An Important Potential To Develop Into A Viable Alternative Approach To Mend Patient Compliance. The First Medicated Chewing Gum (Mcg). Asperum Containing Acetylsalicylic Acid Entered The Market In 1920 As An Analgesic Aid. The Current Study Was Designed To Formulate Herbal Chewing Gums With Anti-Ulcer Which Can Help In Treatment Of Mouth Ulcer. Ocimum Sanctum (Tulsi), Curry Leaves And The Rhizome Of Curcumin Were Used As Actives And The Herbal Gum Base Was Prepared Using Herbal Excipients. Thus, The Medicated Herbal Chewing Gum Was Successfully Formulated And Evaluated For Organoleptic Properties. The Formulation Was Found To Be Pale Yellow In Color With A Sweet Taste.

Keywords:- mouth ulcr, herbs, mouth ulcer gel

Introduction:

Mouth Ulcers Are Yellowish Or White Depression With Red Margination In The Mucus Lining Of The Mouth Cavity, Characterized By Inflammation And Pain. ¹ An Oral Ulcer Is Caused By The Erosion Or Loss Of The Upper Mucosal Layer. It Is One Of The Most Frequently Encountered Pathological Conditions Of The Oral Cavity. These Sores Are The Etiology Of Oral Ulcers Is Not Yet Clear And A Variety Of Conditions Are Believed To Play A Role In Their Occurrence. A Variety Of Viral, Fungal, Treponemal, Autoimmune, Nutritional Deficiencies, Hormonal Changes, Psychological Stress, Malignancy And Other Factors Have Been Implicated In Their Causation. The Nature, Site, Duration And Frequency Of Oral Ulcers Are Sometimes Determined By The Underlying Systemic Condition If Any (E.G., Inflammatory Bowel Disease, Cyclic Neutropenia) ². ³ These Ulcers Are Usually Round With A Slightly Raised Margin And Surrounded By An Erythematous Halo. Based On Their Size And Number, These Ulcers Can Be Classified Into The Following^{4,5}



Fig No.1 Mouth Ulcer



Minor Ulcers: These Are Usually Small, Ranging From 2 To 8 Mm In Diameter And Make Take Up To 10 To 14 Days To Clear Up.

❖ **Major Ulcers:** These Are Bigger, Deeper With Raised And Irregular Borders, Often 1 Cm Or More. Healing Time Ranges From Several Weeks To Months.

❖ **Herpetiform Ulcers:** These Are A Cluster Of Smaller Ulcers, As Small As The Size Of Apinhead.⁶.

Symptoms And Available Treatment:

Mouth Ulcers Are Often Painful And Can Make Eating, Drinking, And Speaking Uncomfortable.

Most Mouth Ulcers Go Away On Their Own Within 1 To 2 Weeks.

Self-Care Steps That May Help Include:

1. Applying Ice Or Cold Water To The Ulcer.
2. Rinsing The Mouth With Warm, Salted Water.
3. Avoiding Sour, Hot, And Spicy Foods.
4. Using Alcohol-Free Mouthwash.
5. Drinking Plenty Of Water.

See A Doctor If:

- i. Mouth Ulcers Interfere With Eating, Drinking, Or Brushing Teeth.
- ii. The Ulcer Has Lasted For Three Weeks.
- iii. You Experience Frequent Mouth Ulcers.

Synthetic And Semi-Synthetic Medicaments Are Suggested To Treat Mouth Ulcers Like Antibiotics And Antiseptics, Local Anesthetics, Local Analgesics, Steroidal And Non-Steroidal Anti-Inflammatory Drugs. Topical Steroids Are The Most Frequently Used Treatments But They Have Some Serious Adverse Effects On The Continuous Application Like Adrenal Insufficiency, Immunosuppression, Osteoporosis, Hyperglycemia, Gastrointestinal Disturbance, Etc. The Use Of Plant Base Medications Is Gaining Huge Popularity Due To Better Patient Compliance And Because Of The Side Effects And The Adverse Effects Of Synthetic Chemicals. Several Studies Have Reported, The Use Of Plant Parts Or Extracts Such Rhizome Of Curcuma Longa, Leaves Ocimum Sanctum (Tulsi), Leaves Of Curry Use For The Treatment Of Oral Ulcers. ⁹ Using Herbal Drug Extract We Prepare Novel Dosages Form Herbal Mouth Ulcer Chewing Gum Medicated Chewing Gum Has An Important Potential To Develop Into A Suitable Alternative

Approach To Mend Patient Compliance.

❖ Tulsi Leaves

Scientific Name: Ocimum Tenuiflo

Family: Lamiaceae.

Active Place:

Ocimum Tenuiflorum Or Tulasi (Common Name) Is A Perennial Plant Belonging To The Family Of Lamiaceae, Native To The Indian Subcontinent And Widespread As A Cultivated Plant All Over The Southeast Asian Tropics

Chemical Constituent: Phytochemical Studies Have Shown That Oleanolic Acid, Ursolic Acid, Rosmarinic Acid, Eugenol, Carvacrol, Linalool, And B-Caryophyllene Are Some Of The Main Chemical Constituents Of Tulsi. Tulsi Is Cultivated For Religious And Traditional Medicine



Fig No.2 Tulasi Leaves

Purposes, And Also For Its Essential Oil. It Is Widely Used As A Herbal Tea, Commonly Used In Ayurveda, And Has A Place Within The Vaishnava Tradition Of Hinduism, In Which Devotees Perform Worship Involving Holy Basil Plants Or Leaves.

Anti-Ulcer Effects:

Fixed Oil: Tulsi's Fixed Oil Has Demonstrated Significant Anti-Ulcer Activity Against Various Ulcer-Inducing Factors In Experimental Animal Models. These Factors Include Aspirin, Indomethacin, Alcohol, Histamine, Reserpine, Serotonin, And Stress. **Gastric Secretion:** Tulsi Also Inhibits Gastric Secretion And Aspirin-Induced Gastric Ulceration In Pylorus-Ligated Rats. **Percentage Of Ulcer Protection:** In A Study, Tulsi Leaf Extract Showed 68.85% Ulcer Protection At A Dose Of 100 Mg/Kg And 65.66% At A Dose Of 200 Mg/Kg. The Standard Drug Ranitidine Exhibited 78.23% Ulcer Protection.

Other Medicinal Uses:

Tulsi Leaf Extracts Are Recommended For Treating Respiratory Illnesses, Rheumatism, Cold, Epilepsy, Asthma, Hiccups, Skin Conditions, Hematological Diseases, Parasitic Infections, Neuralgia, Headaches, Wounds, And Inflammation. Hindus Consider Tulsi A Sacred Plant, And It Holds A Special Place In Indian Culture And Ayurvedic Medicine.

Curcumine:

Scientific Name: *Curcuma Longa*.

Family: Zingiberaceae.

Biological Source: Curcumin Is The Active Ingredient Of The Dietary Spice Turmeric And Is Extracted From The Rhizomes Of *C. Longa*, A Plant In The Zingiberaceae Family.

Native Place: Native To Southern India And Indonesia, Turmeric Is Widely Cultivated On The Mainland And In The Islands Of The Indian Ocean. In Ancient Times It Was Used As A Perfume As Well As A Spice. The Rhizome Has A Pepperlike Aroma And A Somewhat Bitter Warm Taste And Has A Strong Staining Orange-Yellow Colour.



Fig No.3 Curcuma Longa

Chemical Constituent: Native To Southern India And Indonesia, Turmeric Is Widely Cultivated On The Mainland And In The Islands Of The Indian Ocean. In Ancient Times It Was Used As A Perfume As Well As A Spice. The Rhizome Has A Pepperlike Aroma And A Somewhat Bitter Warm Taste And Has A Strong Staining Orange-Yellow Colour.

Morphology:

Turmeric (*Curcuma Longa*) Is A Perennial Herbaceous Plant That Reaches Up To 1 Meter (3.3 Feet) In Height. It Belongs To The Ginger Family (Zingiberaceae). Here Are Some Key Features Of Turmeric's Morphology: Rhizomes: Turmeric Has Highly Branched, Yellow To Orange, Cylindrical, Aromatic Rhizomes. These Tuberous Underground Stems Have Been Used Since Antiquity As A Condiment, A Textile Dye, And Medicinally As An Aromatic Stimulant And Anti- Inflammatory.

Leaves:

The Leaves Emerge From The Branching Rhizomes Just Below The Soil Surface. Older Rhizomes Are Somewhat Scaly And Brown In Color, While Young Rhizomes Are Pale Yellow To Brown-Orange.

Turmeric Plants Bear Long, Simple Leaves With Long Petioles (Leaf Stems). These Leaves Are Used Fresh Or Ground Into A Powder For Culinary Purposes.

Flowers:

Turmeric Produces Small Yellow-Orange Flowers That Are Borne In The Axils Of Waxy Bracts. These Bracts Are Usually Pale Green Or Tinged With Purple. The Inflorescence Of Turmeric Consists Of True Flowers Surrounded By These Protective Bracts¹.

Production And Use:

Turmeric Rhizomes Are Boiled And Then Exposed To Sunlight For Drying. The Dried Rhizomes Vary In Length From About 2.5 To 7.5 Cm (1 To 3 Inches). The Spice Is Usually Sold In Ground Form. Distillation Of Turmeric Yields Essential Oil, With The Main Components Being Turmerone And Ar-Turmerone. The Color Of Turmeric Comes From Curcumin, Which Is Also An Antioxidant.

Antiulcer Activity Of Turmeric:

Turmeric Contains A Bioactive Compound Called **Curcumin**, Which Is Responsible For Many Of Its Medicinal Properties.

Other Medicinal Properties Of Turmeric:

Anti-Inflammatory: Curcumin Helps Reduce Inflammation In The Body.

Antioxidant: Turmeric's Antioxidant Activity Is Higher Than That Of Vitamins C And E.

Anti-Diabetic: It May Have Positive Effects On Blood Sugar Levels.

Wound Healing: Turmeric Has Been Used Traditionally For Wound Healing.

Anti-Fertility: Some Studies Suggest It May Have Anti-Fertility Effects.

Used In Various Diseases: Turmeric Is Effectively Used In Diabetes, Alzheimers And Other Chronic Conditions.

Microscopic Characters:

The Transverse Section Of Turmeric Rhizomes Shows The Outmost 4 To 6 Layers Of Brick Shaped Parenchymatous Cork, Followed By Cork Cabin. The Cortex Onsets Of Thin Walled

Rounded Parenchymatous Cells Containing Scattered Vascular Bundies. Oleo-Resin Cells With Brownish Vascular Bundles Are Present In Cortex And Are Collateral.

Curry Leaves:

Scientific Name: *Murraya Koenigii*.

Family: Rutaceae

Biological Source: *Murraya Koenigii* (L.) Spreng Or Its Common Name Curry Leaf Tree Is A Small Strong Smelling Perennial Shrub Commonly Found In Forests As Undergrowth. It Was Originally Cultivated In India For Its Aromatic Leaves And For Ornament Is Normally Used For Natural Flavoring In Curries And Sauces.

Native Place: The Plant Originated In The Tarai Region Of Uttar Pradesh, India, And At Present It Is Cultivated In Burma, Ceylon, China, Australia And The Pacific Islands.

Chemical Constituent: The Phytoconstituents Isolated So Far From The Leaves Are Alkaloids Viz., Mahanine, Koenine, Koenigine, Koenidine, Girinimbiol, Girinimibine, Koenimbine, O- Methyl Murrayamine A, O-Methyl Mahanine, Isomahanine, Bismahanine, Bispyrayafoline And Other Phytoconstituents Such As Coumarin Glycoside Viz., Scopoti



Fig No .4 Curry Leaves

Chemical Constituent: The Phytoconstituents Isolated So Far From The Leaves Are Alkaloids

Viz., Mahanine, Koenine, Koenigine, Koenidine, Girinimbiol, Girinimibine, Koenimbine, O- Methyl Murrayamine A, O-Methyl Mahanine, Isomahanine, Bismahanine, Bispyrayafoline And Other Phytoconstituents Such As Coumarin Glycoside Viz., Scopoti.

Morphology:

Leaf Appearance:

- I. Curry Leaves Are Small, Glossy, And Elongated.
- II. They Showcase A Vibrant Green Color.
- III. [The Leaves Grow On The Curry Tree, Which Is Characterized By Its Slender Trunk And Compound Leaves.](#)

Tree Description:

1. The Curry Tree (*Bergera Koenigii*) Is A Tropical And Sub-Tropical Tree In The Family Rutaceae.
2. It Grows To A Height Of 4–6 Meters (13–20 Feet) With A Trunk Diameter Of Up To 40 Cm (16 Inches).
3. The Aromatic Leaves Are Pinnate, With 11–21 Leaflets.
4. Each Leaflet Is 2–4 Cm (0.79–1.57 Inches) Long And 1–2 Cm (0.39–0.79 Inches) Broad.
5. The Tree Produces Small White Flowers That Can Self-Pollinate, Resulting In Shiny-Black Drupes Containing A Single, Large Viable Seed.
6. The Berry Pulp Is Edible And Has A Sweet Flavor

Anti-Ulcer Properties:

1. Curry Leaves Are Believed To Have Anti-Ulcer Properties.
2. They Help Protect The Gastric Mucosa From Damage And Promote Healing.
3. The Exact Mechanism Behind This Effect Is Still Not Fully Understood, But It May
4. Involve Modulation Of Inflammatory Mediators.

Quick Healing Of Mouth Ulcers: Due To Their Ropan (Healing) Property, Curry Leaves Can Aid In The Quick Healing Of Mouth Ulcers.

Benefits Of Herbal Chewing Gum:

1. Convenient Self-Medication: Chewing Gum Can Be Administered Directly Without Water.
2. Local Treatment: Active Substances Are Released During Chewing, Targeting Mouth Diseases.
3. Environment-Friendly: Natural Gum Base Is Economical And Safe For Treating Various Mouth Conditions

Featured Prospects:

1. These Gums Incorporate Extracts From Herbal Medicines And Can Be Used In The Treatment Of Mouth Ulcers.
2. The Gum Serves As An Excellent Drug Delivery System For Self- Medication Because It Is Convenient And Can Be Administered Directly Without Water.
3. It Contains One Or More Active Substances That Are Released By Chewing And Can Be Used For Local Treatment Of Oral Diseases Or Systemic Administration After Absorption Through The Buccal Mucosa.
4. The Use Of Natural **Gum Base Makes It Economical, Safe, And Environmentally Friendly**

Hypothesis:

Background: Mouth Ulcers, Also Known As Canker Sores Or Recurrent Aphthous Stomatitis (RAS), Are Painful White Sores That Appear Inside The Mouth. They Typically Heal Within 10 To 14 Days. Various Natural Remedies Have Been Explored For Managing Mouth Ulcers.

Formulation And Evaluation:

A Herbal Chewing Gum Containing Extracts Of Powdered Tulsleaves, Curry Leaves And Turmeric Rhizomes. The Gum Was Prepared By Incorporating Guava Leaf

Extract, Turmeric Rhizome Extract, And Other Necessary Ingredients. To Maintain The

pH Suitable For Oral Mucosa, Triethanolamine Was Added. Physicochemical Parameters Were Studied To Ensure Gum Quality.

Drug Delivery System:

Chewing Gum Serves As A Mobile Drug Delivery System. Herbal Extracts Can Be Incorporated Into The Gum, Allowing For Local Treatment Of Mouth Ulcers. Chewing Gum Is Convenient, Self-Administered, And Doesn't Require Water. It Releases Active Substances Through Buccal Mucosa Absorption.

Natural Gum Base:

Economical And Environmentally Friendly Natural Gum Base Is Used In Treating Various Mouth Diseases.

Aim: "Formulation And Evaluation Of Herbal Mouth Ulcer Gum" Objectives:

Chewing Gum Could Help Protect Your Teeth And Reduce Bad Breath. Especially For Those Who Like Strong Flavored Foods Like Onions And Garlic. Chewing Gum Is

Very Effective To Neutralize The Odor. Chewing Sugar-Free Gum Could Help Protect Your Teeth From Cavities.

2. Chewing Gum Can Be Firmly Attached, So It Can Clean Up Leftover Food On The Tooth Surface.
3. When Chewing Gum, Oral Cavity Repeatedly Biting Movement, Increases Blood Flow In The Face, And Also Trained The Muscles For Chewing And Biting.
4. High Bioavailability: Drug Gets Directly Absorbed From The Oral Mucosa, Preventing The Degradation Of Drug From Gastric Ph Of Stomach.
5. Easy Administration Without Water Promotes Higher Patient Compliance.

Extraction Process:

50 Gm. Powder Of Leaves Part Was Used For Extraction.



Powder Was Passed Through 120# Mesh Sieve To Remove Fine And Coarse Particles



Powder Was Used For Extraction By Using Soxhlet Extraction And Ethanol As A Solvent



After Completion Of Extraction Then Solvent Was Distilled Off And Concentrated Extract Was

Placed On Hot Plate For Solidification



Then Extract Was Kept At Vacuum Desiccators For Removing Moisture And Drying Few Gm Of Extract Was Used For Chemical Tests And Further Investigation



Extract Was Kept At Cool Condition.

Phytochemical Test Test for Alkaloids:

Wagner's Test :20mg Of Turmeric Was Dissolved In 2ml Of Methanol. Few Drops Of 1% Hcl

Added To It. Then The Mixture Was Heated, Kept In Steam And After Cooling. Then The Mixture Was Treated With Few Drops Of Wagner's Reagent. The Sample Was Observed For Turbidity Or Precipitation.

Tannins:

Lead Test :20mg Of Turmeric Was Dissolved In 1ml Of Distilled Water In A Test Tube And 1-3 Drops Of Ferric Chloride Were Added To The Solution. Then The Mixture Was Observed For Blue And Green Colour.

Test For Cardiac Glycosides:

20mg Of Turmeric Was Dissolved In 1ml Of Glacial Acetic Acid And 1-2 Drops Of Ferric Chloride

Solution Was Added. 0.5ml Of Concentrated Sulphuric Acid Was Slowly Added Along The Sides Of The Test Tube. A Brown Ring At The Indicated A Deoxysugar Characteristic Of Cardenolides.

Test For Saponins:

Foam Test :40 Mg Of Turmeric Was Dissolved With 5ml Of Distilled Water And Shaken Vigorously Till A Stable Persistent Froth Was Obtained. The Froth Was Mixed With 3 Drops Of Olive Oil And Shaken Vigorously And Then Observed For Emulsion.

Test For Flavonoids:

Ferric Chloride Test :20mg Of Turmeric Was Dissolved In 1ml Of Distilled Water. 0.5ml Of Dilute Ammonia Solution Was Added To It. Conc. Sulphuric Acid Was Added Later. A Yellow Colour Indicated The Presence Of Flavonoids. The Yellow Colour Disappeared On Allowing The Solution

To Stand

Test For Terpenoids:

Salkowaski's Test:20mg Of Turmeric Was Dissolved In 1ml Of Chloroform And 1ml Of Concentrated Sulphuric Acid Was Added To It. A Reddishbrown Discolouration At The Interface Showed The Presence Of Terpenoids.

Test For Carbohydrates: Fehling's Test: Few Drops Of Extract Are Heated With Fehling's A And B Solution. Appearance Of

Orange Red Precipitate Indicates Presence Of Carbohydrates.

Lactones:

Baljet's Test: Treat Extract With Sodium Picrate Solution. Appearance Of Yellow To Orange Colour Indicates Presence Of Lactone Ring.

Test For Proteins:

Biuret's Test: Add 2ml Of Biuret Reagent To 2ml Of Extract. Shake Well And Warm It On Water Bath. Appearance Of Red Or Violet Colour Indicates Presence Of Proteins.

Fixed Oils And Fatty Acid:

Spot Test: Prepared Spot On The Filter Paper With The Test Solution And Oil Staining On The Filter Paper Indicated The Presence Of Fixed Oil & Fats.

Phytochemical	Test	Observation	Inference
Alkaloids	Wagner Test	Red Precipitate	+
Tannins And Phenolic Compounds	Lead Test	Green Colour	+
Terpenoids And Phytosterols	Salkowaski Test	Raddish Brown Colour	+
Saponins	Form Test	Presence Of Emulsion	+
Flavonoids	Ferric Chloride Test	White Precipitate	+
Glycosides		Brown Ring	+
Test For Lactones	Baljets Test	-	-
Test For Protiens	Biuret Test	-	-
Fixed Oils	Spot Test	Presence Of Spot	+
Fatty Acid	Spot Test	Presence Of Spot	+

Phytochemical Analysis Of Curcuma Longa.

Method Of Formulation:

All Ingredients Were Weight Accurately As Shown In Formulation

Table 1. Crush The Gum Base In The Mortar Pestle. Add Adequate Vol-Ume Of Distilled Water And Properly Stir In The Porcelain Dish And Add Honey Was Mixed. The Dish Was Kept In A Water Bath And Temperature Was Maintained At About 35-45. The Drug CinnamonOil Was Then

Added To The Above Mass. Corresponding Amount Of Sugar, Coloring Agent And Flavoring Agent Was Added To The Above Mixture With Continuous Stirring Up To 30 Min. Finally The

Adequate Amount Of Flavor Was Incorporated In The Mixture. The Mass Was Poured Into The

Mould And Was Allowed To Cool At Room Temperature. The Gum Pieces Were Removed

1.	Gum Base	160mg
2.	Tulasi Leaves Extract	80 Mg
3.	Curcuma Longa Extract	80 Mg
4.	Curry Leaves Extract	80 Mg
5.	Honey	Q.S
6.	Flavoring Agent	Q.S
	Water	Q.S

Equipment:

- a) Ph Meter.
- b) Thermometer.
- c) Orbital Shaker.
- d) Magnetic Stirrer.
- e) Centrifuge Machine.
- f) Weighing Balance.

Glasswares :

- a) Beaker.
- b) Porcelain Dish.
- c) Glass Rod.
- d) Water Bath.
- e) Pair Of Tung.
- f) Measuring Cylinder
- g) Metal Stand.
- h) Ointment Slab.
- i) Ointment Spatula.
- j) Beaker.
- k) Test Tubes.

Result And Discussion:

All The Formulations Prepared By Conventional Method Are Light Pink Color, Soft In Nature And They Show A Good Consistency, But Sticky In Nature.The Show Anti-Ulcer Activity. Herbal Chewing Gum Of Tulasi Leves Extract, Curry Leves Extract And Curcuma Longa

Rhizome Was Successfully Prepared By Using Different Concentrations Of Tulasi Leves Extract ,Curry Leves Extract And Curcuma Longa Rhizome This Effect On Drug Release Profile.

Conclusion:

Herbal Chewing Gum Of Cinnamon Oil Was Successfully Prepared this Effect On Drug Release Profile. Based On The Drug Release Profile Of All The Formulations, Formulation F3 Is The Optimize Formulation Which Produces Maximum Drug Release In 14min. Thus, It Is The Better Option To Prepare Mouth Ulcer Herbal Chewing Gum To Achieve Better Patient Compliance And Improve Drug Release

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