

## Formulation of polyherbal Hand wash gel

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### Abstraction:-

The point of current work was arrangement of polyherbal handwash gels for microbe free hands. There are different plans are accessible in the market it incorporates Hand sanitizer. Hand cleanser, Cleanser paper, Hand wash gel Hand sanitizer can't kill a wide range of microbes where Hand wash Gel kill all microorganisms and ready to hydrated the skin and keep it new. Additionally, our formed Hand wash contains natural leaf concentrate of curry leaf (*Murraya Koenigii*), Guava leaf (*Psidium guajava L.*) and Papaya leaf (*Carica Papaya*). The planned natural hand wash gel was evaluated for actual properties like appearance, consistency, pH, skin bothering test, froth level, froth maintenance, Antibacterial action and so on. The Antibacterial action of arranged definition was checked against microbe like *Escherichia coli*, *Staphylococcus aureus* by agar dissemination technique. Handwash gel is usually utilized individual consideration item that assistance to keep up with hand cleanliness and forestall the spread of disease. The outcome disclosed that arranged polyherbal hand wash gel definition showed huge zone of hindrance contrasted and promoted detailing Thus, this home grown plants separate utilized in planning of polyherbal hand wash on critical use. Catchphrases: Polyherbal hand wash Curry leaves (*Murraya Koenigii*), Guava (*Psidium guajava L.*). Papaya leaves (*Carica Papaya*) antibacterial action

### I. INTRODUCTION :-

From antiquated time restorative plant was given more inclination to. Restorative plant otherwise called therapeutic spices have been found and utilized in regular therapeutic practices from old period. Plant incorporated different of substance compounds for a few capabilities including guard and protecting against microbes, organisms and different infections. Lately, the world has seen an extraordinary accentuation on cleanliness and sanitation due to the worldwide wellbeing emergency brought about by the

Coronavirus pandemic. Hand cleanliness, specifically, has turned into a basic part of staying away from the transmission of irresistible or transferable sicknesses. Hand washing with cleanser and water has been generally suggested by wellbeing specialists as one of the best strategies to keep up with hand cleanliness. In any case, the accessibility of clean water and cleanser isn't generally ensured, particularly in asset obliged settings. To address this test, analysts and researchers have been investigating elective details that can offer compelling hand cleanliness arrangements. Natural: A sort of medication that utilizes roots, stem, leaves, blossoms or seeds of plant to further develop wellbeing, forestall sickness and treat disease. Beauty care products: It implies any article planned to be scoured, poured, sprinkled or showered on or acquainted into or generally applied with the human body or any part thereof for purifying, decorating, advancing engaging quality or modifying the appearance and incorporates any article planned for use as part of beauty care products. Cleanliness: Cleanliness is characterized as the upkeep of the act of tidiness which is most significant in the keep up with of prosperity, saving body cleanliness and involving the cleaning agent essential for solid life this idea comprehended need of keep up with cleanliness in illness avoidance. Hand wash: Hand washing or hand cleanliness is the demonstration of cleaning one's hands regardless of the utilization of water or another fluid, or with the utilization of cleanser to eliminate soil, soil, as well as miniature organic entity. Gel: Gel is a two-stage flexible colloidal material comprising of a scattered fluid consolidated in the strong stage. Cleanser: Cleanser is a salt of unsaturated fat utilized in assortment of purging and ointment item. Sanitizer "A substance or item that is utilized to decrease or end pathogenic specialist on surfaces". One such definition acquiring consideration is polyherbal hand wash gel, which joins the antimicrobial properties of different plant-based fixings. Polyherbal details have for some time been utilized

in conventional medication frameworks across the globe for their restorative advantages. Presently, they are being saddled to make inventive hand wash gels that can give compelling purifying and sterilization while being delicate on the skin. The detailing and assessment of Polyherbal hand wash gels include an exhaustive logical way to deal with select, mix, and upgrade the blend of plant extricates and different fixings. The plan interaction thinks about the antimicrobial, antiviral, and antifungal properties of various natural parts to make a synergistic impact. These parts might incorporate spices, for example, Neem, Tulsi, Aloe-vera, Tea tree, Lemon, and others, each with

its interesting advantageous properties, Following are the rundown of home grown plant which show antibacterial movement. Skin is the biggest organ in human body with an area of around 1.2-2 square meter. Skin is comprised of water, proteins, fats and minerals. Capability of skin [21] Insurance Discharge and Discharge Intensity guideline Sensation Retention Plants or spices are known for remedial parts they contain these parts are taken out and added to the hand wash making it protected and better to wash your hand. It gives the skin smooth surface delicate appearance. It can accomplish with conventional hand wash item.

Tables no 1:-herbal plant show various antibacterial activity

Sr.no	Herbal plant	Part of plant used
1	Mint	Leaf
2	Garlic	Bulb
3	Curry tree	Leaf
4	Lemon	Fruit
5	Clove	Fruit
6	Fennel	Fruit
7	Senna	Leaf
8	Amla	Fruit
9	Spinach	Leaf
10	Turmeric	Root
11	Aloe vera	Leaf
12	Tulsi	Leaf
13	Guava	Leaf
14	Coriander	Leaf
15	Marigold	Leaf
16	Betel	Leaf
17	Frenugreek	Leaf
18	Tea	Leaf

19	Papaya leaves	Leaf
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The natural hand wash aroma keeps the skin new. While utilizing natural handwash, the gentle frothing activity doesn't disturb the skin it can work on the bringing down of skin versatility.

Benefits of Home grown Hand wash Gel :-

1. No aftereffects.
  2. Microorganisms on our hands can be limited.
  3. It additionally assists with clearing germicide and contagious issue looked by the skin.
  4. It additionally assists with eliminating soil and oil actually from the skin.
  5. Simpler access contrasted with utilizing cleanser and water.
  6. The most straightforward method for disposing of microorganism.
  7. Hand wash keep microorganisms from going into our body. Simple to apply and no secondary effect.
- Herbal Plant Profile (18, 19, 20)



Plant image

- 1) curry tree:-  
Plant image



Natural Name:-murraya koenigii  
 Family :-rutaceae  
 Antibacterialcompound:-mahanine,linalool

- 2)guava leave:-  
Plant image



Organic Name :-psidium guajava  
 Family:-l.myrtaceae  
 Antibacterialcompound:-terpinene,pinene

- 3)papaya leave:-

Biological Name:-carica papaya  
 Family:- Caricaceae  
 Antibacterialcompound:-Procatechuic,5,7-dimethoxycoumarine

Materials :-

Assortment of Plant and Confirmation Leaves of Curry (Murraya Koenigii), Guava (Psidium guajava) and Papaya (Carica Papaya) were gathered from nearby locale and dried it well based on restorative purposes. The plants were recognized, affirmed, and validated by Dr. S.M. Shendge plant Taxonomist, Balwant School Vita. After confirmation process the leaves (Curry, Guava, Papaya) are gathered, washed, and conceal dried at room temperature. The leaves are mixed by electric blender.

Technique :-

-Extraction Curry leaves-Readiness of Ethanolic extricate [8] New leaves are gathered, washed and conceal dried at room temperature for 3-4 days. These leaves are changed over into fine powder by utilizing blender. Take 20 gm curry leaves blended in 200 ml ethanol and DW (8:2) covered with aluminum foil and kept at 25 °C-27 °C for 2 days. Then, at that point, gathered supernatant concentrate, to get last volume of curry leaves and this ethanolic separate utilized for try.

Guava leaves Concentrate [7]:-

New leaves are gathered, washed and conceal dried at room temperature. These leaves are put in blender to make a fine powder. Four solvents are utilized by their rising extremity; n-

hexane, methanol, ethanol and refined water use for extraction process. The fine powder is blended in with specific given dissolvable to make 20% conc. The blend was included measuring glass (500 ml) and covered with aluminum foil for 2 days at 25 °C-27 °C temperature. Then positioned measuring glass at stage shaker at 70 rpm. Following 2 days maceration solvents move to 50 ml tube for centrifuged at 4000 rpm for 10 mins at 25 °C and gather supernatant concentrate.

Papaya leaves [6] :-

The leaves are gathered, washed and conceal dried for a considerable length of time. These dried leaves are put in blender to make a fine powder. The Carica Papaya departs are removed with n-hexane and ethanol by utilizing Soxhlet contraption. Take 50 gm leaves powder in thimble were removed with 500 ml (n-hexane and ethanol) in round base carafe. It takes 8 hrs extraction.process finished. Then gather remove and put in cooler.

C. Phytochemical screening [1, 4] :- Alkaloid Test:-

2 ml of fluid concentrate + 5 ml of Hcl +filtered. This filtrate utilized for alkaloid testing.

Draggendorff's test :- 2 ml of filtrate + hardly any drops of Draggendorff's re 4/9 ives orange-red hasten which shows alkaloid is available.

Mayer's test:-

1 ml of filtrate + scarcely any drops of Mayer's reagent gives cream-hued accelerate and which demonstrates alkaloid is available.

Wagner test :-

1 ml of concentrate + scarcely any drops of Wagner's reagent gives Red earthy colored accelerate and which demonstrates alkaloid is available.

Tannins Test:- 5 ml Concentrate + 1 ml ferric chloride (5%) gives Dull green or Dark blue tone and which shows tannin is available.

Saponin Test :- 1.

1 ml of concentrate + 20 ml refined water + shake for 15 mins it prompts development of froth and which shows saponin is available.

2. 1 ml of concentrate + heat with 1% lead Acetic acid derivation gives white encourage and which demonstrates saponin is available.

Carb Test (Molisch's Test):- 2 ml of concentrate + 2 ml conc. Sulphuric corrosive + not many drops of Molisch's reagent lead to development of violet ring at interphase and which shows starches is available.

Heart Glycoside Test (Keller Killani Test) :- 5 ml of concentrate + 2 ml Cold Acidic Corrosive + scarcely any drops of ferric chloride + 1 ml H2SO4 which prompts arrangement of brown or violet ring, which shows cardiovascular glycoside is available.

Flavonoid Test (Shinoda :- Test) 2 ml of concentrate + Liquor + conc. Hel (drop wise) + Intensity. Development of pink tone and which demonstrates flavonoid is available. Saps Test 2 ml of concentrate + heat with harsh pop, arrangement of red tone and which demonstrates pitches are available.

Sr no	Ingredients	Quality					Role
		A1	A2	A3	A4	A5	
1	Curry leaves exatrat	10mg	10mg	10 mg	10mg	10 mg	Antimicrob ial
2	Guava leaf extract	10 mg	10 mg	10mg	10 mg	10mg	Antimicrob ial
3	Papaya leaf extract	10mg	10 mg	10 mg	10mg	10mg	Antimicrob ial
4	Glycerine	2.5ml	2.5 ml	2.5 ml	2.5 ml	2.5 ml	Softening agent

5	Sodium lauryl sulphate	3gm	3 gm	3gm	3gm	3gm	Foaming agent
6	Carbapol (940)	1gm	2 gm	3 gm	4gm	5gm	Gelling agent
7	Methyl Paraben	0.50	0.50	0.50	0.50	0.50	Preservatives
8	Distilled water	q.s	q.s	q.s	q.s	q.s	Vehicle
9	Rose oil	0.3 ml	0.3ml	0.3 ml	0.3 ml	0.3 ml	Perfume

**Terpenoids Test (Salkowski Test) :-**

2 ml of concentrate + 1 ml Chloroform + not many drops of conc. H<sub>2</sub>SO<sub>4</sub> gives ruddy earthy colored hasten and which demonstrates terpenoids are available. System of Readiness of Handwash Gel [9]

**Procedure:-**

1) Polyherbal hand wash gel was ready by utilizing 2 gm Carbopol (940) absorbed 20 ml refined water for 24 hr.

2) Take concentrate of each plant (10 ml) by get from the maceration cycle and Soxhlet (curry leaves, guava, papaya leaves) blend in with marginally warming.

3) After warming arrangement saved aside for 5-8 mins. Then, at that point, Sodium Lauryl Sulfate (3 gm) added in 10ml DW then glycerin (2.5 ml) were included above stage with steady blending .

Methyl paraben (0.50 gm) included refined water and scatter into above extricate.

4) Then added splashed polymer (Carbopol 940) was mixed involving mechanical shaker for uniform scattering of polymer. This polymer added to concentrate to make homogenous gel Rose oil (q.s) as a scent.

5) At last, detailing was effectively ready and put in all around shut compartment and labelled.

Evaluation parameter for Polyherbal hand wash gel [4, 9] :-

**Organoleptic test :-**

Organoleptic test incorporates variety, surface and smell was assessed by a. Variety Visual assessment b. Surface Touch sensation c. Smell By nosing 0.3 ml. 4.50

**Homogeneity and Appearance:-**

Homogeneity and appearance were assessed by visual observation.

**Test for Coarseness:-**

1 ml of handwash gel was taken between two fingertips and scoured it then assessed the plan Test for skin aggravation:-

Test for skin disturbance was completed was by applying Polyherbal Hand wash Gel close by for 30 min, following 30 minutes of washing notice any tingling, rashes or redness available by visual observation.

**Test for pH identification:-**

A Polyherbal hand wash gel (1 gm) broke down into 100 ml DW. The pH was estimated by utilizing potentiometric pH meter.

Spreadability test :- Polyherbal Hand wash Gel (0.5 gm) was kept and squeezed between two glass slides and left for 5 mins were no seriously spreading. Breadth of spreaded circle was estimated in cm.

Test for thickness :- Polyherbal hand wash gel not set in stone through Brookfield viscometer.

**Test for froth level:-**

Polyherbal Hand wash Gel (1gm) was blended in 50 ml refined water (A). From (A) pull out 10 ml arrangement in 100 ml volumetric flacon and cosmetics volume (B). Step through 10 examination cylinder and afterward add 1 ml, 2 ml, 3 ml.... 10 ml in 10 different test tubes from (B) and make up the volume 10 ml with refined water. Then test tube were shaken for 10 seconds and permit to represent 5 mins lastly measure the froth level.

Test for froth maintenance :- Polyherbal hand wash gel (25 ml) moved into estimating chamber and shaken for multiple times. The volum froth was really taken a look at after 1 min. 2min and 4min stretch was recorded, froth maintenance

and it stays stable atleast 5 mins. 2.5 ml 3 gm 2 gm 4.50 0.3 ml.

Test for solidness:- The Soundness of Polyherbal Hand wash Gel was assessed by putting away at various temperature conditions like 25 °C, 37 °C and 40 °C upto multi week. During the soundness no adjustment of variety, no adjustment of surface or no stage detachment and no were noticed.

Antibacterial Activity of herbal Handwash [10, 11, 12] procedure:

Antibacterial action against staphylococcus aureus, E. coli microscopic organisms by well dispersion technique Take 15 ml supplement agar (Hey media) were ready from bacterial culture. The inoculums of the microorganism were ready from the bacterial societies. 15 ml of supplement agar (Howdy media) medium was poured in clean disinfected Petri plates and permitted to cool and cement. 100 µlof stock of bacterial strain was pipette out and spread over the mediuemently with a spreading pole till it dried appropriately. When the agar was solidified, then, at that point, Test Slides was put on the plate in the way and the plates were brooded at 37 °C for 24 hr. Antibacterial action was assessed by estimating the measurements of the zone of restraints (ZI). Take 15 ml of supplement agar (Hello there media) in perfect and disinfected petri plate. Permit to represent 15-20 mins to cool and set the media. Then pull out a 100 ul of stock of bacterial strain with the assistance of pipette, spread over the agar media with spreading pole nd dry appropriately. Then example slide are brooded at 37 °C for 1 day (24 hr). Antibacterial action was surveyed by estimating the region of the restraint zone.

## II. RESULT:-

Obtainment and confirmation of plant New leaves of curry leaves (*Murraya Koenigii*), Guava leaves (*Psidium guajava*) and Papaya leaves (*Carica Papaya*), were gathered and dried appropriately from neighborhood locale. The plant was recognized, checked and validated by Dr. S.M. Shendge plant taxonomist, Balwant School Vita.

Planning of powder :-

Plant leaves were changed over into powder.

## REFERENCES:-

[1]. Rashmi JB, Naveen G. Phytochemical analysis and antibacterial activity of

different leaf extracts of *Murraya Koenigii*. UBB. 2016;1:5.

- [2]. Anne Waugh, Allison Grant, A textbook of Anatomy and Physiology in Health and illness, Elsevier, 12th edition, page no.362.
- [3]. Sandeep DS, Charyulu RN, Nayak P, Maharjan A, Ghalan I. Formulations of antimicrobial polyherbal hand wash. Research Journal of Pharmacy and Technology. 2016;9(7):864-6.
- [4]. Jadhav SA, Mohite AD, Patil SJ, Varude AA, Yelmar SR, Gidde ND. Formulation and Evaluation of Antibacterial Herbal Handwash Containing Natural Extract of Prickly Malvastrum
- [5]. Ganguly D, Banerjeela M, Chakraborty A, Daslc H, Sekhld A, Arif MD. Preparation and Evaluation of Polyherbal Handwash of Different Herbal Sources. Neuroquantology. 2022 Nov;20(11):8113-23.
- [6]. Alorkpa EJ, Boadi NO, Badu M, Saah SA. Phytochemical screening, antimicrobial and antioxidant properties of assorted *Carica Papaya* leaves in Ghana. Journal of Medicinal Plants Studies. 2016;4(6): 193-8.
- [7]. Biswas B, Rogers K, McLau ghlin F, Daniels D, Yadav A. Antimicrobial activities of leaf extracts of *Guava (Psidium guajava L.)* on two gram-negative and gram positive bacteria. International journal of microbiology. 2013 Oct 20;2013.
- [8]. Al Harbi H, Irfan UM, Ali S. The antibacterial effect of curry leaves (*Murraya Koenigii*). EJPMR. 2016;3:382-7.
- [9]. Niraj Terkar, Ankita Sharma, Jatin Tekawade, formulation and evaluation of polyherbal hand wash gel, International journal of science and research (IJSR), 2021 Aug; 10(8):1213-1219.
- [10]. Hufford CD, Funderburk MJ, Morgan JM, Robertson LW. Two antimicrobial alkaloids from heartwood of *Liriodendron tulipifera L.* Journal of Pharmaceutical Sciences. 1975 May 1;64(5):789- 92.
- [11]. Umadevi S, Mohanta GP, Chelladurai V. Manna PK, Manavalan R. Antibacterial and antifungal a Khan S, Khan GM. In vitro antifungal activity of *Rhazya stricta*.

- Pakistan journal of pharmaceutical sciences. 2007 Oct 1;20(4):279-84.
- [12]. Activity of *Andrographis echinodes*. Journal of Natural Remedies. 2003 Jun 1;1858
- [13]. Mbachu IL, Ojukwu MP, Omuero R, Lincoln JO. Evaluation of the antimicrobial activity of curry leaves (*Murraya Koenigii*). University Journal of Science. 2018, 7
- [14]. Rajendran MP, Pallaiyan BB, Selvaraj N. Chemical composition, antibacterial and antioxidant profile of essential oil from *Murraya Koenigii* (L) leaves. Avicenna journal of phytomedicine. 2014 May;4(3):200.
- [15]. Mohamed I, Minhas PS, Fathima K, Sahana VM, Sowmya C. Antibacterial activity of leaves extract of Guava (*Psidium guajava*). International Journal of Research in Pharmaceutical and Biomedical Sciences. 2012;3(1 ):1-2
- [16]. Luo Y, Peng B, Wei W, Tian X, Wu Z. Antioxidant and anti-diabetic activities of polysaccharides from Guava leaves. Molecules. 2019 Apr 5;24(7): 1343.
- [17]. Romasi E, Karina JK, Parhusip AJ. Antibacterial activity of Papaya leaf extracts against pathogenic bacteria. Makara Journal of Technology. 2012 Mar 20;15(2):173
- [18]. [https://en.wikipedia.org/wiki/Curry\\_tree](https://en.wikipedia.org/wiki/Curry_tree)
19. <https://en.wikipedia.org/wiki/Papaya>
- [19]. [https://en.wikipedia.org/wiki/Psidium\\_guajava](https://en.wikipedia.org/wiki/Psidium_guajava)
- [20]. <https://www.hse.gov.uk/skin/professional/causes/structure.htm>