IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

FORMULATION AND EVALUATION OF POLY HERBAL HAND WASH

P.Twila Pushpa[1*], Namratha Sunkara[2], Kabita Banik [3] Nahid[4]

Bharat Institute of Technology, Mangalpally, Hyderabad, 501510.

Corresponding author: P. Twila Pushpa, Email: twila.palaparthi@gmail.com,9908236572.

ABSTRACT

The aim of the present study is to formulate and evaluate herbal hand wash gel by Using extracts of Azadirachta indica (neem powder), Ocimum tenuiflorum (Tulasi powder), Mentha (mint powder), Syzygium aromaticum (clove oil), Sapindus mukorossi (rithapowder), carbolpol 940 (gelling agent), methyl Paraben (preservative), Glycerin (softening agent), distilled water, (vehicle), Turmeric (colorant),Rose oil (perfume), Saponin Extract. To select the plant materials. To extract powders from plants by air drying method to get particle free extract. To prepare herbal hand was gel by using suitable agents. To evaluate herbal hand wash gel. Like cosmetics and cosmeceuticals (a cosmetic that has claimed medicinal properties) are topically applied but they have ingredients that influences the biological actions of skin. The WHO estimates that most of the population of Asian country presently use herbal medicine for the purpose of hand hygiene includes preparation of hand wash. the present study was carried out to formulate polyherbal hand wash gel containing herbal extract which is used not only for the purpose of cleaning hands but also for the prevention of bacterial growth. Its composition was prepared according to skin delicateness so that it cannot cause any type of irritation. Hence it can be concluded that polyherbal hand wash gel are much better than the plain soaps or existing marketed hand wash due to their ingredient's and effectiveness on our skin of hands as well a suitable for all type of skin.

Key Words:

Azadirachta indica, Ocimum tenuiflorum , Mentha, Syzygium aromaticum, Sapindus mukorossi, carbolpol 940, methyl Paraben.

FORMULATION AND EVALUATION OF POLYHERBAL HAND WASH

1. Introduction

- Hands are the major route of microbe and illness transfer; hand cleanliness is the most efficient way to prevent the spread of hazardous germs and diseases. In healthcare, hand cleanliness is the best and most effective, simplest, and affordable technique to prevent nosocomial infections. Contaminated hands can function as vectors for the spread of germs. Outbreaks are conveyed fromone human to another when a food handler contaminates his or her hands andthen transfers these bacteria to customers via hand contact with food or drinks. The user is exposed after ingesting these germs, which might cause gastrointestinal disease. Microorganisms infiltrate the food supply when people handle ready-to-eat foods.

- The hands of healthcare providers are the main cause of the spread of multidrug-resistant bacteria and sickness to patients. As an outcome, it presents the issue of hygienic hand cleansing. Various antimicrobial compounds are now accessible as alcohol-based hand wash, detergent, and other items on the market. These soaps or solutions aid in the prevention of health-care- associated microbiological contamination, although they come with certain disadvantages or adverse reactions. Their usage on a regular basis might promote skin irritation and infection resistance.

➢ **Anatomy and physiology of skin:**

- Skin is the layer of usually soft, flexible outer tissue covering and largest organ of the human body that plays a physical barrier between the external and the internal environment that is serves function of protection and homeostatic. PH of skin is 4 to 5.6. The Skin composed of three layers:

a) Epidermis

b) Dermis

c) Subcutaneous Tissue.

(a) Epidermis:

The Epidermis is a thin layer of skin. It is the outer layer of skin. It is composed of epithelial tissue. Functions of the epidermis include touch and protection. This Skinis further divided into five separate layers, they are the:

1) Stratum Corneum:

The Stratum Corneum is the outermost layer of epidermis, and is made up of 10 to 30 thin layers of continually shedding, dead keratinocytes. The Corneum is referredto as the 'Horny layer', because its cells are toughened like an animal's horn

2) Stratum Lucidum:

Present only in skin of fingertips, palms, and soles; consists of four to six rows of clear, flat, dead keratinocytes with large amounts of keratin.

3) Stratum Granulosum:

The Stratum Granulosum is a thin layer which is placed in between the stratum spinosum and stratum lucidum. This layer helps to form a waterproof barrier that function to prevent fluid loss from the body. In this layer production of keratin occurswhich is the main component of skin.

4) Stratum Spinosum:

The Stratum Spinosum layer found in between the stratum basale and the stratum granulosum. This layer provide strength and flexibility to skin.

5) Stratum Basale (Stratum germinativum):

Eight to ten rows of many - sided keratinocytes with bundles of keratin intermediatefi laments; contains projections of melanocytes and intraepidermal macrophage.

(b) The Dermis:

The Dermis is a middle layer of skin. Underneath the epidermis lies the dermis. As there was presence of blood vessels the skin was nourish due to oxygen and nutrientsand helps to remove waste products. It contains nerves that help us relay signals coming from the skin. These signals include various sensation like touch, pressure, temperature, etc. It also contains Collagen, a protein that is responsible for giving skin strength.

(c) The Subcutaneous Tissue / Hypodermis / Subcutis:

1. It is the innermost layer of the skin which is made up of fat cells and connectivetissue. The Subcutis acts as a layer of insulation to protect internal body organs and muscles from shock and changes in temperature. Skin is being the most exposed part of our body requires protection from skin pathogens. Usually, transient and resistent flora type of microbes present on the hands. Resident flora (E. g., Staphylococcus aureus) colonizing deeper skin layers, Transient flora (Gram-negative bacilli) which colonizes the superficial skin layers and these microbes are easily removed by Hand washing.

- In the Current Scenario of mechanized life style, Natural remedies are more acceptable in the belief that they are safer with fewer side effects that the synthetic ones. Herbal formulations have growing demand in the worldmarket. Considering this ultimatum; an attempt has been made to screen classical literature for the herbs with antimicrobial properties and found that Azadirachta indica (Neem) and Mentha Piperita (Pudina) has this antimicrobial activity.

1.1 NEEM

- ***Azadirachta indica***, commonly known as **neem**, **nimtree** or **Indian lilac**, is atree in the mahogany family Meliaceae. It is one of two species in the genus *Azadirachta*, and is native to the Indian subcontinent and most of the countriesin Africa. It is typically grown in tropical and semi-tropical regions. Neem trees also grow on islands in southern Iran. Its fruits and seeds are the s So Source of neem oil.

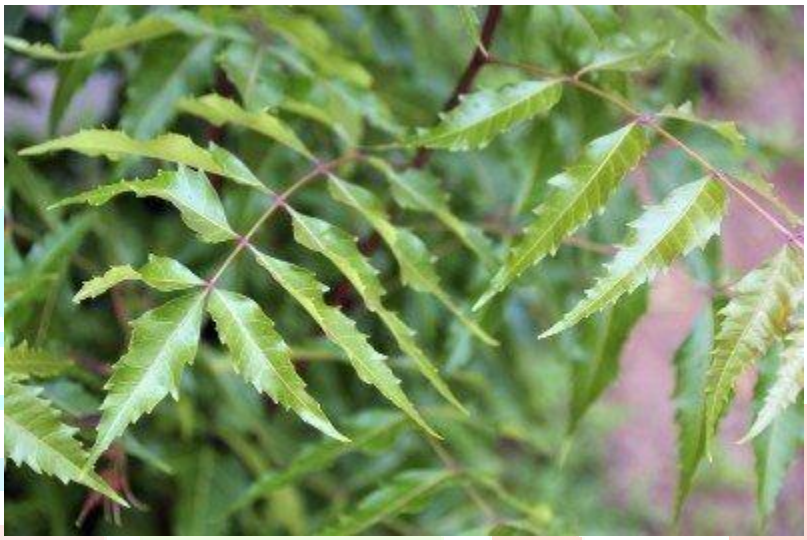

Figure 1.Neem (Azadirachta indica)

➢ **DESCRIPTION:**

- Neem is a fast-growing tree that can reach a height of 15–20 metres (49–66 ft), and rarely 35–40 m (115–131 ft). It is deciduous, shedding many of its leaves during the dry winter months. The branches are wide and spreading. The fairly dense crown is roundish and may reach a diameter of 20–25 m (66–82 ft). The neem tree is similar.

- The fruit is a smooth (glabrous), olive-like drupe which varies in shape from elongate oval to nearly roundish, and when ripe is 14–28 mm (½–1⅛ in) by 10–15 mm (⅜–⅝ in). The fruit skin (exocarp) is thin and the bitter-sweet pulp(mesocarp) is yellowish-white and very fibrous. The mesocarp is 3–5 mm (⅛–¼ in) thick. The white, hard inner shell (endocarp) of the fruit encloses one, rarely two, or three, elongated seeds (kernels) having a brown seed coat.

- The neem tree is often confused with a similar looking tree called bakain. Bakain also has toothed leaflets and similar looking fruit. One difference is that neem leaves are pinnate but bakain leaves are twice-and thrice-pinnate.

➢ ECOLOGY:

The neem tree is noted for its drought resistance. Normally it thrives in areas with sub-arid to sub-humid conditions, with an annual rainfall of 400–1,200 mm (16–47 in). It can grow in regions with an annual rainfall below 400 mm,but in such cases it depends largely on ground water levels. Neem can grow in many different types of soil, but it thrives best on well drained deep and sandy soils. It is a typical tropical to subtropical tree and exists at annual meantemperatures of 21–32 °C (70–90 °F). It can tolerate high to very high temperatures and does not tolerate temperature below 5 °C (41 °F). Neem is one of a very few shade-giving trees that thrive in drought-prone areas e.g. thedry coastal, southern districts of India and Pakistan. The trees are not at all delicate about water quality and thrive on the merest trickle of water, whatever the quality. In India and tropical countries where the Indian diaspora has reached, it is very common to see neem trees used for shade lining streets, around temples, schools and other such public buildings or in most people's back yards. In very dry areas the trees are planted on large tracts of land.

➢ WEED STATUS:

- Neem is considered as a weed in many areas, including some parts of the Middle East, most of Sub-Saharan Africa including West Africa and IndianOcean states, and some parts of Australia. Ecologically, it survives well in similar environments to its own, but its weed potential has not been fully assessed.
- In April 2015, *A. indica* was declared a class B and C weed in the NorthernTerritory, Australia, meaning its growth and spread must be controlled and plants or propagules are not allowed to be brought into the NT. It is illegal to buy, sell, or transport the plants or seeds. Its declaration as a weed came in response to its invasion of waterways in the "Top End" of the territory.
- After being introduced into Australia, possibly in the 1940s, *A. indica* was originally planted in the Northern Territory to provide shade for cattle. Trial plantations were established between the 1960s and 1980s in Darwin, Queensland, and Western Australia, but the Australian neem industry did notprove viable. The tree has now spread into the savanna, particularly around waterways, and naturalised populations exist in several areas.

➢ **PHYTOCHEMICALS:**

- Neem fruit, seeds, leaves, stems, and bark contain diverse phytochemicals, some of which were first discovered in Azadirachta seed extracts, such as azadirachtin established in the 1960s as an insect antifeedant, growth disruptor, and insecticide. The yield of azadirachtin from crushing 2 kg of seeds is about 5 g.

- In addition to azadirachtin and related limonoids, the seed oil contains glycerides, diverse polyphenols, nimbolide, triterpenes, and beta-sitosterol. The yellow, bitter oil has a garlic-like odor and contains about 2% of limonoids compounds. The leaves contain quercetin, catechins, carotenes, andvitamin C.

➢ **USES:**

- Neem leaves are dried in India and placed in cupboards to prevent insects eating the clothes, and also in tins where rice is stored. The flowers are also used in many Indian festivals like Ugadi.

➢ **TRADITIONAL MEDICINE:**

- Products made from neem trees have been used in the traditional medicine ofIndia for centuries, but there is insufficient clinical evidence to indicate any benefits of using neem for medicinal purposes. In adults, no specific doses have been established, and short-term use of neem appears to be safe, while long-term use may harm the kidneys or liver; in small children, neem oil is toxic and can lead to death.[11] Neem may also cause miscarriages, infertility,and low blood sugar.

➢ **PEST AND DISESASE CONTROL:**

- Neem is a key ingredient in non-pesticide management (NPM), providing a natural alternative to synthetic pesticides. Neem seeds are ground into powder that is soaked overnight in water and sprayed on the crop. To be effective, it must be applied repeatedly, at least every ten days. Neem does not directly kill insects. It acts as an anti-feedant, repellent, and egg-laying deterrent and thus protects the crop from damage. The insects starve and die within a few days. Neem also suppresses the subsequent hatching of their eggs. Neem- based fertilizers have been effective against southern armyworm. Neem cake may be used as a fertilizer. Tree the neem tree is of great importance for its anti-desertification properties and possibly as a good carbon dioxide sink. It is also used for maintaining soil fertility.

➢ **OTHER USES:**

- Fertilizer: neem extract is added to fertilizers (urea) as a nitrification inhibitor.
- Tree: the neem tree is of great importance for its anti-desertification propertiesand possibly as a good carbon dioxide sink. It is also used for maintaining soilfertility.
- Animal feed: neem leaves can be occasionally used as forage for ruminants and rabbits.
- Fertilizer: neem extract is added to fertilizers (urea) as a nitrification inhibitor.
- Teeth cleaning: neem has traditionally been used as a type of teeth-cleaning twig[1].

1.2 TULSI:

- Ocimum tenuliforem, commonly known as holy basil, tulsi or tulasi, is an aromatic perennial plant in the family Lamiaceae. It is native to the Indian subcontinent and widespread as a cultivated plant throughout the Southeast Asian tropicsTulsi is cultivated for religious and traditional medicine purposes, and also for its essential oil. It is widely used as 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.
  - The variety of Ocimum tenuiflorum used in Thai cuisine is referred to as Thai holy basil (Thai: กะเพรา kaphrao) and is the key herb in phat kaphrao, a stir-fry dish it is not the same as Thai basil, which is a variety of Ocimum basilicum.

➢ MORPHOLOGY:

- Holy basil is an erect, many-branched subshrub, 30–60 cm (12–24 in) tall withhairy stems. Leaves are green or purple; they are simple, petiole, with an ovateblade up to 5 cm (2 in) long, which usually has a slightly toothed margin; theyare strongly scented and have a decussate phyllotaxy. The purplish flowers are placed in close whorls on elongated racemes.

- The three main morphotypes cultivated in India and Nepal are ***Ram tulsi*** (the most common type, with broad bright green leaves that are slightly sweet), the less common purplish green-leaved (**Krishna** or ***Shyam tulsi***) and the common wild ***vana tulsi*** (e.g., ***Ocimum gratissimum***).

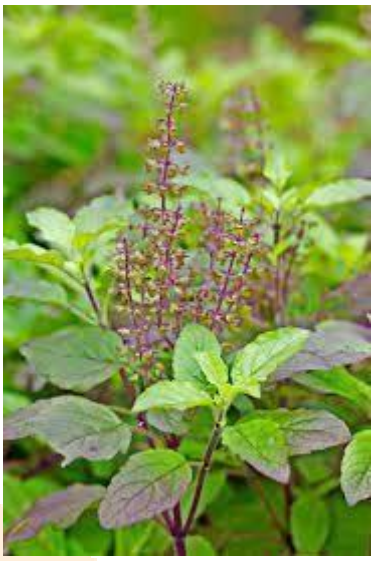

Figure 2.Tulasi (Ocimum tenuliforem)

- **CHEMICALCOMPOSITION:**

- Some of the phytochemical constituents of ***tulsi*** are oleanolic acid, ursolic acid, rosmarinic acid, eugenol, carvacrol, linalool, and β-caryophyllene (about 8%).

- *Tulsi* essential oil consists mostly of eugenol (~70%) β-elemene (~11.0%), β-caryophyllene (~8%), and germacrene (~2%), with the balance being madeup of various trace compounds, mostly terpenes.

- USES:

- *Tulsi* (Sanskrit: Surasa) has been used in Ayurveda and Siddha practices for its supposed treatment of disease[2].

1.3 MINT:

- ***Mentha*** (also known as **mint**, from Greek *míntha*,Linear is a genus of plantsin the family Lamiaceae (mint family) The exact distinction between species is unclear;is estimated that 13 to 24 species exist. Hybridization occurs naturally where some species' ranges overlap. Many hybrids and cultivars areknown.

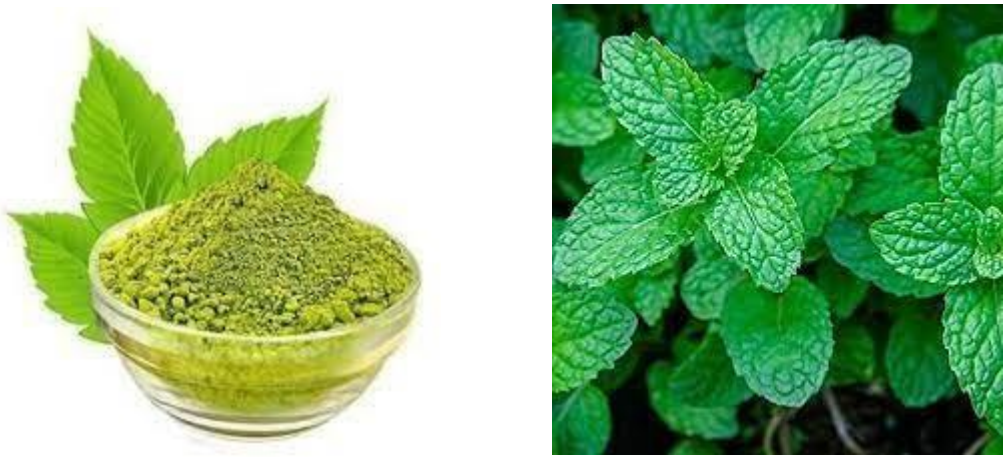

Figure 3.Mint (Mentha)

➢ **DESCRIPTION:**

- Mints are aromatic, almost exclusively perennial herbs. They have wide- spreading underground and overground stolons and erect, square, branched stems. The leaves are arranged in opposite pairs, from oblong to lanceolate, often downy, and with a serrated margin. Leaf colors range from dark greenand gray-green to purple, blue, and sometimes pale yellow. The flowers are white to purple and produced in false whorls called verticillasters. The corolla is two-lipped with four subequal lobes, the upper lobe usually the largest. Thefruit is a nutlet, containing one to four seeds.

➢ **TAXONOMY**:

- *Mentha* is a member of the tribe Mentheae in the subfamily Nepetoideae. Thetribe contains about 65 genera, and relationships within it remain obscure. Authors have disagreed on the circumscription of *Mentha*. For example, *M. cervina* has been placed in *Pulegium* and *Preslia*, and *M. cunninghamii* has been placed in *Micromeria*. In 2004, a molecular phylogenetic study indicated that both *M. cervina* and *M. cunninghamii* should be included in *Mentha*. However, *M. cunninghamii* was excluded in a 2007 treatment of thegenus.

- More than 3,000 names have been published in the genus *Mentha*, at ranks from species to forms, the majority of which are regarded as synonyms or illegitimate names. The taxonomy of the genus is made difficult because many species hybridize readily, or are themselves derived from possibly ancient hybridization events. Seeds from hybrids give rise to variable.offspring, which may spread through vegetative propagation. The variability has led to what has been described as "paroxysms of species and sub specific taxa"; for example, one taxonomist published 434 new mint taxa for central Europe alone between 1911 and 1916. Recent sources recognize between 1 and 24 species.

➢ **TRADITIONAL MEDICINE:**

- The ancient Greeks rubbed mint on their arms, believing it would make themstronger.[18] Mint was originally used as a medicinal herb to treat stomach ache and chest pains.[19] There are several uses in traditional medicine and preliminary research for possible use in treating irritable bowel syndrome.
- Menthol from mint essential oil (40–90%) is an ingredient of many cosmeticsand some perfumes. Menthol and mint essential oil are also used in aromatherapy which may have clinical use to alleviate post-surgery nausea.[19][21]

➢ **ALLERGIC REACTION:**

- Although it is used in many consumer products, mint may cause allergic reactions in some people, inducing symptoms such as abdominal cramps, diarrhoea, headaches, heartburn, tingling or numbing around the mouth,anaphylaxis or contact dermatitis.

➢ **USES:**

- Rich in Nutrients.
- May Improve Irritable Bowel Syndrome.
- May Help Relieve Indigestion.
- May Decrease Breastfeeding Pain[3].

1.4 TURMERIC:

- Turmeric is a flowering plant, Curcuma longa, of the ginger family, Zingiberaceae, the rhizomes of which are used in cooking. The plant is a perennial, rhizomatous, herbaceous plant native to the Indian subcontinent and Southeast Asia that requires temperatures between 20 and 30 °C (68 and 86 °F) and a considerable amount of annual rainfall to thrive. Plants are gathered each year for their rhizomes, some for propagation in the following season and some for consumption.
- The rhizomes are used fresh or boiled in water and dried, after which they areground into a deep orange-yellow powder commonly used as a coloring and flavoring agent in many Asian cuisines, especially for curries, as well as for dyeing, characteristics imparted by the principal turmeric constituent, curcumin.Turmeric powder has a warm, bitter, black pepper-like flavours andearthy, mustard-like aroma.
- Curcumin, a bright yellow chemical produced by the turmeric plant, isapproved as a food additive by the World Health Organization, European Parliament, and United States Food and Drug Administration.

➢ **ORIGIN AND DISTRUBUTION:**

- Although long used in Ayurveda medicine, where it is also known as haridra, there is no high-quality clinical evidence that consuming turmeric or curcumin is effective for treating any disease.

The greatest diversity of Curcuma species by number alone is in India, at around 40 to 45 species. Thailand has a comparable 30 to 40 species. Other countries in tropical Asiaalso have numerous wild species of Curcuma. Recent studies have also shown that the taxonomy of Curcuma longa is problematic, with only the specimens from South India being identifiable as C. longa. The phylogeny, relationships, intraspecific and interspecific variation, and even identity of other species and cultivars in other parts of the world still need to be established and validated. Various species currently utilized and sold as "turmeric" in other parts of Asia have been shown to belong to several physically similar taxa, with overlapping local names.

- **PHYTOCHEMISTRY:**

- The greatest diversity of Curcuma species by number alone is in India, at around 40 to 45 species. Thailand has a comparable 30 to 40 species. Other countries in tropical Asia also have numerous wild species of Curcuma. Recent studies have also shown that the taxonomy of Curcuma longa is problematic, with only the specimens from South India being identifiable as
  C. longa. The phylogeny, relationships, intraspecific and interspecific variation, and even identity of other species and cultivars in other parts ofthe world still need to be established and validated. Various species currently utilized and sold as "turmeric" in other parts of Asia have been shown to belong to several physically similar taxa, with overlapping localnames.

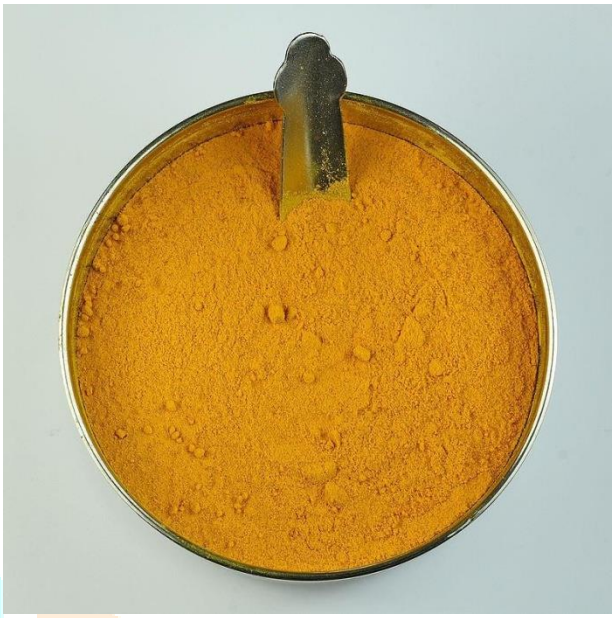

Figure 4. Turmeric

- **TRADITIONAL USES:**

- In 2019, the European Medicines Agency concluded that turmeric herbal teas,or other forms taken by mouth, on the basis of their long-standing traditionaluse, could be used to relieve mild digestive problems, such as feelings of fullness and flatulence.Turmeric grows wild in the forests of South and Southeast Asia, where it is collected for use in classical Indian medicine (Siddha or Ayurveda). In Eastern India, the plant is used as one of the nine components of nabapatrika along with young plantain or banana plant, taro leaves, barley (jayanti), wood apple (bilva), pomegranate (darimba), Saraca indica, manaka (Arum), or manakochu, and rice paddy. The Haldi ceremony called gaye holud in Bengal (literally "yellow on the body") is a ceremony observed during wedding celebrations of people of Indian culture all throughout the Indian subcontinent.In Tamil Nadu and Andhra Pradesh, as a part of the Tamil–Telugu marriage ritual, dried turmeric tuber tied with stringis used to create a Thali necklace. In western and coastal India, during weddings of the Marathi and Konkani people, Kannada Brahmins, turmeric

tubers are tied with strings by the couple to their wrists during a ceremony, Kankana Bandhana.

- Friedrich Ratzel reported in The History of Mankind during 1896, that in Micronesia, turmeric powder was applied for embellishment of body, clothing, utensils, and ceremonial uses[4].

1.5 RITHA:

- Sapindus mukorossi, commonly known as Indian soapberry, washnut, or ritha, is a species of tree in the family Sapindaceae. It is a deciduous tree thatgrows in the lower foothills and midhills of the Himalayas at altitudes of up to 1,200 metres (4,000 ft). It is also native to western coastal Karnataka, Maharashtra, and Goa in India. It is tolerant to reasonably poor soil, can be planted around farmers' home, and one tree can produce 30 to 35 kilograms (66 to 77 lb) of fruit per year.

➢ **SURFACTANT:**

- Methods of extracting the maximum amount of oil from existing oil reserveshas become a scientific focus in a world that has become dependent on fossilfuels. Researchers have found that the Ritha fruit can be used in an enhancedoil recovery technique.[8] More specifically, Chhetri, Watts, Rahman, and Islam (2009) found that extracts from the soapnut can be used as an organic surfactant to increase the mobility of oil from the fields. In addition, researchers have demonstrated the potential for the soapnut to be used as a natural surfactant for washing arsenic from soils that are rich in iron.

Figure 5.Ritha (Sapindius mukorossi)

➢ **USES:**

- The value of the tree mostly comes from its fruit, which can be used formany pharmacological and cleansing purposes.

1.6 Clove oil

- Cloves are the aromatic flower buds of a tree in the family Myrtaceous, Syzygium aromaticum. They are native to the Maluku Islands (or Moluccas) in Indonesia, and are commonly used as a spice, flavouring or fragrance in consumer products, such as toothpaste, soaps, or cosmetics. Cloves are available throughout the year owing to different harvest seasons across various countries.

➢ **BOTANICAL FEATURES:**

- The clove tree is an evergreen that grows up to 8–12 metres (26–39 ft) tall, with large leaves and crimson flowers grouped in terminal clusters. The flower buds initially have a pale hue, gradually turn green, then transition to a bright red when ready for harvest. Cloves are harvested at 1.5–2 centimetres (0.59–0.79 in) long, and consist of a long calyx that terminates in four spreading sepals, and four unopened petals that form a small central ball.

Figure 6.Clove

➢ **USES:**

- Cloves are used in the cuisine of Asian, African, Mediterranean, and the near and Middle East countries, lending flavour to meats, curries, and marinades, as well as fruit (such as apples, pears, and rhubarb). Cloves may be used to give aromatic and flavour qualities to hot beverages, often combined with other ingredients such as lemon and sugar. They are a common element in spice blends, including pumpkin pie spice and specula as spices.
- In Mexican cuisine, cloves are best known as clavos de color, and often accompany cumin and cinnamon. They are also used in Peruvian cuisine, in awide variety of dishes such as carapulcra and arroz con leche.A majorcomponent of clove taste is imparted by the chemical eugenol, and the quantity of the spice required is typically small. It pairs well with cinnamon, allspice, vanilla, red wine, basil, onion, citrus peel, star anise, and peppercorns.

1.7 ROSE OIL:

- Rose oil (rose Otto, attar of rose, attar of roses or rose essence) is the essentialoil extracted from the petals of various types of rose. Rose Otto's are extractedthrough steam distillation, while rose absolutes are obtained through solvent extraction, the absolute being used more commonly in perfumery. The production technique originated in Persia. Even with their high price and the advent of organic synthesis, rose oils are still perhaps the most widely used essential oil in perfumery.

➢ **DISTILLATION:**

- In the first part of the two-stage process of distillation, large stills - traditionally of copper - are filled with roses and water. The still is fired for 60–105 minutes. The vaporized water and rose oil exit the still and enter a condensing apparatus and are then collected in a flask. This distillation yieldsa very concentrated oil, direct oil, which makes up about 20% of the final product of the whole process. The water which condenses along with the oil is drained off and redistilled, cohobating, in order to obtain the water-solublefractions of the rose oil such as phenethyl alcohol which are a vital componentof the aroma and which make up the large bulk, 80%, of the oil. The two oilsare combined and make the final rose attar.
- Rose attar is mobile in room temperature and is usually clear, light yellow in color. It will form white crystals at normal room temperature which disappearwhen the oil is gently warmed. It will tend to become more viscous at lower temperatures due to this crystallization of some of its components.

  The essence has a very strong odour, but is pleasant when diluted and used forperfume. Attar of roses was once made in India, Persia, Syria, and the Ottoman Empire. The Rose Valley in Bulgaria, near the town of Kazanlak, is among the major producers of attar of roses in the world.In India, Kanauji is an important city of fabrication of rose attar, and Kanauji is nicknamed "TheGrasse of the East or The Grasse of the Orient". Grasse (in France) is an important city of fabrication of rose fragrance. Due to the heat required for distillation, some of the compounds extracted from the rose denature or breakdown chemically. As such, rose attar does not smell very similar to "fresh" roses. The hydrosol portion of the distillate is known as rosewater. This inexpensive by-product is used widely as a food flavouring as well as in skincare.

2. AIM AND OBJECTIVE OF THE PRESENT WORK

The aim of the present study is to formulate and evaluate herbal hand wash gel byUsing extracts of **Azadirachta indica** (neem powder), **Ocimum tenuiflorum** (Tulasi powder), **Mentha** (mint powder), **Syzygium aromaticum** (clove oil), **Sapindus mukorossi** (rithapowder), **carbolpol 940** (gelling agent), **methyl Paraben** (preservative), **Glycerin** (softening agent), **distilled water**, (vehicle)**, Turmeric** (colorant), **rose oil** (perfume).

OBJECTIVES:

- To select the plant materials.
- To extract powders from plants by air drying method to get particle freeextract
- To prepare herbal hand was gel by using suitable agents.
- To evaluate herbal hand wash gel.

3. Review of Literature:

- Zeeshan Afsaret et al., (2016) formulation and evaluation of poly herbal soap and hand sanitizer. The objective seen in this research project was to preparehand sanitizer and soap formulations using the extracts of Cassia fistula, Milletiapinnata and Ficus religiosa and to investigate the antimicrobial activity of the extracts against the common organisms which cause nasocomial infections. Furthermore to evaluate testability and phytochemical parameters of the prepared formulations so that they can be further standardized and used commercially. Zeeshan Afsaret et al (2016) firstly collect the plants Cassia fistula, Milletia pinnata and Ficus religiosa from Mysore district, the specimen were authenticated at RRL, Bangalore. For extract preparation Zeeshan Afsaret et al used leaves and bark of Cassia fistula, Milletia pinnata and Ficus religiosa were dried in hot air oven at 35oCfor three days, powdered to a mesh size of # 40 and stored in air tight for extraction[13]
- Formulation and evaluation of poly herbal hand sanitizer. The objective of this project was to prepare herbal hand sanitizer and to investigate whether the formulation show an antimicrobial activity against the common organismswhich cause nasocomial infections[5].
- Rina maskare et al., (2019) used leaves of Azadirachta indica and Eucalyptus globules collected from Gondia city in 2019later the leaves was dried in shedcoarsely powdered and then used further work. for the formulation of hand sanitizer the methodology used by Rina maskare is as follows firstly extraction of Azadirachta indica and Eucalyptus globulus was done in MIBPGondia, for extraction solvents like Ethanol, methanol was used which was obtained from S D FINE - CHEMLIMITED, Mumbai, India. Also Bacterial Strains: Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Bacillus subtilis were procured form D. B. Science College, Gondia. Was used in this project to observe inhibition of bacterial growth. The result revealed in this study was the % yield was found to be 14% and 16% for Azadirachta indica and Eucalyptus globulus respectively. The methanolic and ethanolic extract showed good antibacterial activity against E. coli, S. aureus, B. subtilis with 1.56 mg/ml, 3.12mg/ml, 3.12mg/ml and 1.56mg/ml, 3.12mg/ml, 3.12mg/ml and mild to moderate antibacterial activity against P. aeruginosa with 6.25mg/ml and 12.5mg/ml respectively[6] .

- Mounika et al., (2017), Formulation and evaluation of polyherbal hand wash gel containing essential oils. The objective seen in this research project was to evaluate the antibacterial efficiency of various herbal oils such as eucalyptus oil, cinnamon oil, geranium oil, peppermint oil, rosemary oil, clove oil and orange oil. The anti - microbial activity of the formulated herbal handwash gel was tested common organisms by pour plate technique and the results obtained were compared with commercial antibacterial standards. They firstly collect the oils from Allin exporter Mumbai and Ooty. In this synerio preliminary anti - microbial screening by pour plate techniques against E. Coli and S. Aureus A. Mounika et. al prepared two Formulation in which first formulation is prepared by using HPMC - 50 as gelling agent and other by using carbopol 940. And evaluation parameters was checked, the result reveled in the project. According to zone of inhibition the combination of cinnamon and geranium oil was equally effective against both the bacteria. It produces wider zone of inhibition against S. Aureus 7.5 mm, E. coli 8 mm[7].
- Mashood Ahmed shah et al., (2014), formulation evaluation and antibacterial efficiency of herbal Hand wash gel. The objective seen in this research project was to formulate and evaluate polyherbal hand wash gel containing cinnamon oil. The anti - microbial activity of formulated herbal Hand wash gel was tested against e. coli, S. Aureus and salmonella and the results obtained were compared with commercial antibacterial standards. Mashood Ahmed shah ET. al firstly collect the cinnamon, Mentha, lavender, eucalyptus and nutmeg oil from alpha chemicals, India. S. aureus, E. coli and salmonella were collected from department of microbiology, Lincoln University college Malaysia In this synerio preliminary anti - microbial screening by spread plate technique against gram positive and gram negative bacteria. Mashood Ahmed shah ET. al prepared formulation of 100 ml and these concentrations were further used in the formulation and evaluation parameter was checked. The results reveled in the project of Mashood Ahmed shah et. al was cinnamon oil shows great activity. The widest the zone of inhibition against S. Aureus with diameter of 4.0 cm, E. coli 3.5cm followed by salmonella 3.0cm.[8]

4. NEED FOR STUDY;

The main aim for the preparation of polyherbal hand wash gel is for hand hygiene. Herbal medicines have been extensively utilized as effectual remedies for the Prevention and multiple health conditions. There are numerous hand wash gel are Available in the market which have some adverse effects, to avoid these adverse Effects like **itching**, **dermatitis**, **irritation** etc. The synthetic hand wash

is an attempt made to formulate a polyherbal hand wash using **Neem extracts** (**Antimicrobial activity**) and **Tulasi** (**purifying activity**), against the microbes or Disease causing bacterial and safeguards our skin. in the polyherbal hand wash gel Formulation along with the some other polyherbal extracts are used which also Plays an important role.

Materials and method :

- **Collection of plant material:**

The plants Neem [Azadirachta indica] & Peppermint [Mentha piperita] leaves were collected from Bharat Institute of Technology Herbal Garden, IBP. To remove sand particles from sample, wash it thoroughly with fresh water. The plant material dried under sunlight for 4 to five days. Then the dried plant material where crushed, sieved to get nearly fine amorphous powder. Powdered material was extracted with a suitable solvent. [10], [11]. Ritha powder, turmeric

powder, Clove oil and Tulsi oil were collected from the local market of Hyderabad. Soil extract were chosen for antibacterial activity.

➢ **Extraction of plant material:**

- 10 grams of each dry plant material Neem, Peppermint powder and 5gm of Ritha powder were added in water. The mixture was heated on water bath at 600 C for 1 hour, and then filtered through Whatman Filter Paper to get the Particle free Extract[5,6].

➢ **Method of Preparation :**

1) Polyherbal Hand wash Gel was prepared using Carbopol 940 as Gelling agentwhich is socked in 15ml distilled water overnight.

2) Neem and Peppermint extracts, Ritha Powder along with Tulsi and Clove oilwere measured accurately and dissolved by gentle heating.

3) After heating, keep the solution aside for sometime.

4) The required quantity of Sodium lauryl Sulphate dissolved in 10ml distilled wateralong with Glycerine were mixed in above aqueous phase with continuous stirring.

5) The methyl paraben was dissolved in remaining quantity of purified water and dispersed into the extract.

6) The swelled polymer (Carbopol 940) was stirred using a mechanical stirrer to ensure the uniform dispersion of polymer and finally added into the above mixture to form a Homogenous Gel and then the required quantity of Rose oil was added forFragrance.

7) Lastly, it was stored in well closed container and labelled suitably for further analysis [5,6].

Sr. No.	Ingredients	Quantity(gm/ml)	Uses
1	Neem	10	Antimicrobial Agent
2	Tulsi	10	Purifying Agent
3	Pudina	5	Antibacterial Agent
4	Clove Oil	0.50	Antibacterial Agent
5	Ritha	5	Foaming Agent
6	Saponin extract	3	Foaming Agent
7	Carbopol 940	5	Gelling Agent
8	Methyl Paraben	0.50	Preservative

9	Glycerine	2.5	Softening Agent
10	Rose Oil	2	Perfume
11	Turmeric	2	Antiseptic
12	Distilled water	Up to 100 ml	Vehicle

➢ **Evaluation Parameters of Polyherbal Hand wash Gel Prepared formulation of Polyherbal Hand wash Gel was subjected to following evaluation parameters:**

1) Organoleptic Evaluation Parameters like colour, odour, texture was carried out Colour and texture were evaluated by visual and touch sensation respectively. TheOdour was inspected by sensing the formulation[5,6,8,9].

2) Appearance and Homogenicity: Appearance and Homogenicity was evaluated by visual inspection[5,6,11].

3) Grittiness: 1ml of Gel was taken on finger tips and rubbed between twofingertips, then the formulation was evaluated[8,10,11].

4) ***Skin irritation test:*** Skin Irritation Test was evaluated by applying Polyherbal Hand wash Gel on skin and left for 30 min, after 30 minutes of washing observe anyitching, rashes or redness on skin by sensory and visual inspection [6,11].

5) PH: 1gm of Sample of Polyherbal Hand wash Gel was taken and dissolved it into100ml distilled water. The pH solution was measured by standardized digital pH meter[5,6,8,10,12,13].

6) Spread ability: 0.5gm of Sample of Polyherbal Hand wash Gel was pressed between two slides and left for about 5 minutes where no more spreading was expected. Diameter of spreaded circle was measured in cm and was taken as comparative values for spread ability[6,8,14].

7) Viscosity: The viscosity of Polyherbal Hand wash Gel was determined by using Ostwald viscometer[6,8,10,14,15].

8) Foam Height: One gram of sample of Polyherbal Hand wash Gel was taken and dispersed in 50ml distilled water. Dispersion was transferred into measuring

5. Result & Discussion:

Literature reveals that leaves of Neem (**Azadirachta indica**) possess Antimicrobial property, leaves of Pudina possess Antibacterial activity, and extract of clove possess Antibacterial activity. Hence the present study was designed to formulate polyherbal hand wash having Antimicrobial and antibacterial properties the poly herbal hand wash was found to be light green colour non greasy smooth in texture and easily washable with a good PH near to normal skin PH range .No skin irritationwash observed while using it for few days .From all the studies we can finally statesthat polyherbal hand wash has shown cleansing action with no skin irritation and easy to use as it is polyherbal hand wash ,so decreases the chances of side effects.

Sr.NO.	Evaluation Parameters	Formulated Polyherbal hand Wash	Marketed HerbalHand Wash (Patanjali)
1	Colour	Light Green	Light Orange
2	Odour	Rose Like	Pleasant
3	Texture	Smooth	Smooth
5	Grittiness	Non-Gritty	Non-Gritty
6	Skin irritation test	No Irritation	No Irritation
7	PH	7.5	8.1
8	Cleaning Action	29%	29%

Stability:

The Stability studies were carried out for Polyherbal Hand wash formulation by storing at different temperature conditions like 40°C, 25°C, and 37°C for 1 week. During the stability studies no change in colour and no phase separation were observed in the formulated hand wash. From below formulations, the formulation F2 was found to be stable.

Ingredients	**F1 (gm/ml)**	**F2 (gm/ml)**	**F3 (gm/ml)**	**F4 (gm/ml)**
Neem	15 gm	10 gm	8 gm	9 gm
Tulsi	15 gm	10 gm	9 gm	7 gm
Pudina	10 gm	5 gm	6 gm	7 gm
Clove oil	1 ml	0.50 ml	0.50 ml	0.50 ml
Ritha	25 gm	20 gm	15 gm	10 gm
Saponin Extract	7 ml	3 ml	5 ml	6 ml
Carbopol 940	10 gm	5 gm	8 gm	9 gm
Methyl Paraben	0.50 gm	0.50 gm	0.50 gm	0.50 gm
Glycerine	7 ml	2.5 ml	2.5 ml	2 ml
Rose Oil	2.5 ml	2 ml	2.5 ml	3 ml
Turmeric	2.5 gm	2 gm	2 gm	3 gm
Distilled Water	Upto 100ml	Up to 100ml	Up to 100ml	Up to 100 ml

7. SUMMARY & CONCLUSION;

Like cosmetics and cosmeceuticals (a cosmetic that has claimed medicinal properties) are topically applied but they have ingredients that influences the biological actions of skin. The WHO estimates that most of the population of Asiancountry presently use herbal medicine for the purpose of hand hygiene includes preparation of hand wash.the present study was carried out to formulate polyherbalhand wash gel containing herbal extract which is used not only for the purpose of cleaning hands but also for the prevention of bacterial growth. Its composition was prepared according to skin delicateness so that it cannot cause any type of irritation.Hence it can be concluded that polyherbal hand wash gel are much better than the plain soaps or existing marketed hand wash due to their ingredient's and effectiveness on our skin of hands as well a suitable for all type of skin.

BIBLIOGRAPHY:

1. https://en.m.wikipedia.org/wiki/Azadirachta_indica
2. https://en.m.wikipedia.org/wiki/Ocimum_tenuiflorum
3. https://en.m.wikipedia.org/wiki/Turmeric
4. https://en.m.wikipedia.org/wiki/Rita_rita
5. Shaloo, Shayna Shafi, Simran Singh, Shashi Verma, Ritesh Kumar Tiwari andDevika Tripathi, *Formulation and Development of Mint containing Herbal Hand Sanitizer*, European Journal of Pharmaceutical and Medical Research, **2017 [11], 454 - 457.**
6. Powar P. V, Bhandari N. R, Arya Ashwini, Sharma P. H., *Formulation and Evaluation of Poly Herbal Anti - Bacterial Gel Based Hand Wash*, International Journal of Pharmaceutical Sciences Review and Research, **2015; 33**[**1**] **,79 - 82.**
7. Nandkishor S. Wani, Ashish K. Bhalerao, Vikram P. Ranawre, Rahul Zanje, *Formulation and Evaluation of Herbal Sanitizer*,**2013 [5],40-44**
8. Mounika, Vijayanand P, V. Jyoti, *Formulation and Evaluation of Polyherbal Hand wash Gel* containing essential oils, International Journal of Pharmacy and Analytical Research,**2017**, **6[4], 645 - 653**.
9. Zeeshan Afsar, Salma Khanam, *Formulation and Evaluation of Polyherbal Soap and Hand Sanitizer*, International Research Journal of Pharmacy, **2016**,**7** [**8**] ,**54-57**
10. Andeep DS, Narayana Charyulu R, Prashant Nayak, Aliss Maharjan, Indira Ghalan, *Formulation of Antimicrobial Polyherbal Hand Wash, Research J. Pharm and Tech*., **2016, 9[7],864 - 866**
11. Megha Bahuguna and Shil1pi Kashyap, *Formulation and Evaluation of Hand Wash*, World Journal of Pharmaceutical Research.**2011, 5**[**7**], **1559** – **1577**
12. AGRI FARMING, "Tulsi Oil Extraction Process, Benefits, Uses" [Online]. Available: https: //www.agrifarming. in/tulsi - oil - extraction - process - benefits – uses
13. Rina Maskare, Nitin Indurwade, Abhishek Purohit, Veena Atrahe, of *Polyherbal Formulation and Evaluation Hand Sanitizer*, International Journalof Pharmacy and Biological Science, **2019, 449 – 454**
14. Hany. M. Yenia, Methanolic Extract of Neem [Azadirachta Indica] and its Antibacterial Activity against Foodborne and Contaminated Bacteria Sodiumdodecyl Sulphate Polyacrylamide gel Electrophoresis [SDS PAGE], American Eurasian J. Agricultural and Environmental Science,**2016**, **16** [**3**]: **598 - 604**,
15. Mashood Ahmad Shah, Satheesh Babu, Hatarjan, Mohd. Goushuddin, *Formulation, Evaluation and Antibacterial Efficiency of Herbal Hand Wash Gel*, Research article **2014,25[2 23], 120 – 124**