



A Comprehensive Review on Polyherbal Facewash with Antibacterial Properties

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ABSTRACT:

Background: Polyherbal facewash blend several plants to improve skincare. Face wash is a type of cosmetic product that is typically used to cleanse the face without leaving it feeling dry. And it is also called as cleanser. A cleanser is a product used to remove various forms of bacteria and microorganisms from the pores and skin of the face, as well as make-up, dead skin cells, oil, and dust. Natural remedies are more widely accepted since they are thought to be safer, have fewer adverse effects, and are readily available. Herbal formulations are increasingly popular in the global market.

Methods: So, the current study examines the creation and assessment of an herbal face wash gel with Antibacterial properties. This formulation contains the aqueous extract of Neem leaves (*Azadirachta indica*), Tulsi (*Ocimum Sanctum L.*), Alovera (*Aloe barbadensis miller*), coconut oil (*Cocos nucifera L.*) and Turmeric (*Curcuma longa L.*) by a maceration procedure.

Results: Due to the plants' good anti-bacterial, anti-oxidant, and anti-inflammatory properties, they were included in the formulation. This review focusses on polyherbal face washes as a safe, natural, and eco-friendly alternative to conventional skincare products.

Conclusion: Natural, efficient skincare solutions can be found in polyherbal face washes. Multiple herbs and natural substances work together to promote healthy skin by exhibiting antibacterial, anti-inflammatory, and antioxidant properties.

Keywords: *Neem, Anti-bacterial, PH, Alovera, Facewash, Polyherbal*

Introduction:

The Indian herbal medication industry is most likely the world's oldest medical care system. Herbs have a long history in ancient India, and one form of herbal medicine is even described in the Vedas, the Indians' oldest holy text. Herbal medicine is not a new concept for western healers and medical practitioners, since plant extracts are still used in many prescribed medications today.[1] Countries around the world now appreciate this old kind of medicine, and Indian herbal pharmaceuticals are in high demand, resulting in rapid growth and an annual growth rate of about 30%.[1], [2] A face wash is a cleanser that removes makeup, dirt, oil, dead skin cells, and other pollutants from the face. While a facial cleanser can remove them, its effectiveness may not be 100%. Indian herbs are the richest source of ingredients utilised in the cosmetic industry. Herbal cosmetics were seeing significant demand in the global market. There is a vast range of herbal cosmetic products used in beauty regimens to meet the objective of beautification.[3] In order to cleanse, hydrate, and treat the skin, it usually consists of a blend of surfactants, moisturising agents, and different active substances. Facewashes are designed to be kinder to the sensitive skin on the face than regular soaps are, and they frequently contain extra healthy elements to help with certain skin issues like sensitivity, dryness, or acne.[4]



Fig :1

Herbal medications are more widely accepted than modern chemical compounds because they are believed to be safe, provide a wide range of therapeutic benefits, and have few to no negative effects. The skin is the largest and most vulnerable part of our bodies to disease. To defend against and prevent skin diseases, formulations with antibacterial, antioxidant, anti-inflammatory, and other qualities must be utilised.[5]

Skin:

The skin protects against viruses, regulates body temperature, and improves our sense of touch and feeling. The skin is a large and important organ of the body that determines a person's personality, especially the sensitive skin of the face, which is widely used as a standard measure. Protecting the body from the outside world is the skin. When exposed to sunlight, the skin produces vitamin D, a helpful chemical component.[6] The skin functions as a sensory organ and helps control body temperature. Skin has a number of biological components, including keratinocytes, melanocytes, and erythrocytes. It has multilayered structures due to its many components, including as cells and fibres. The skin is made up of skin layers. The integumentary system, consisting of skin and supporting tissues, protects the entire body.[7] Its many sympathetic and autonomic nerve fibres facilitate communication with the brain. Skin has three basic layers: the dermis, hypodermis, and epidermis.

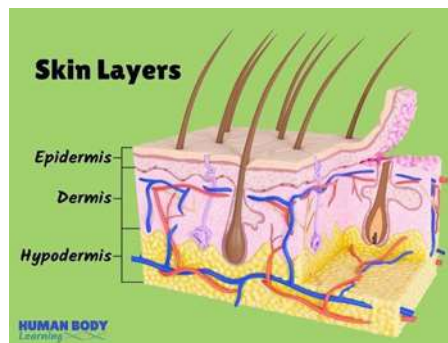


Fig 2: - Skin Layers

A. Epidermis:

The epidermis is the skin's outermost layer, measuring around 0.2 mm thick. This stratum lacks veins and capillaries. The thickness of the epidermis is affected by one's body position.[8] The epidermis is the body's principal defence against bacteria, viruses, and the external environment. [9], [10]To fulfil all of its functions, the epidermis is made up of four thinner layers. The top layer, known as the stratum corneum, varies in thickness according to its location on the body.[11]

B. Dermis:

Skin's dermis holds a significant amount of the magic. The dermis is mostly composed of collagen, elastin, and fibroblasts, which are the cells that create collagen and elastic tissue. This layer has several uses. The dermis layer is made up of blood and lymph vessels that oversee the delivery of nutrition to your skin as well as the elimination of waste and impurities. Sweat glands are located in the dermis.[7][12], [13] Sweating is produced through your pores, which removes impurities from the body and cools it. The skin also contains hair follicles, which attach to your hair, and oil glands, which create too much oil on occasion, irritating skin and producing breakouts and greasiness.[14], [15]

C. Subcutaneous layer (hypodermis):

The deepest layer of skin is composed of fat that connects muscles to bones. It is so deep that active ingredients in skin care products will never get there. In an emergency, it can provide energy and defend the body. Additionally, fat acts as a cushion, protecting your bones, muscles, and organs. Finally, the subcutaneous layer contains additional blood vessels, nerve endings, hair follicle roots, and the deepest oil-secreting sebaceous glands.[5], [11], [16], [17]

Facewash:

A face wash is a cleansing solution for the face that removes debris, oil, makeup, and other impurities. A face wash plays an important role in keeping skin clear, germ-free, smooth, and fresh; it also moisturises the skin's horny layer without irritating it. It helps clear pores and prevent acne, leaving skin feeling clean and refreshed. A daily skincare routine includes a face wash, toner, and moisturiser.[5], [18]

Types of Therapeutic agents used in facewash:

1. **Antibacterial:** Antibacterial means inhibiting the growth of microorganisms on the skin. Antibacterial facewashes effectively clean and prevent acne and skin breakouts, particularly for people with oily or greasy skin.[19], [20]
2. **Antiacne:** Acne cleansers are particularly effective in removing extra sebum without drying out your skin. Antiacne medications are utilised for specific treatment purposes based on severity.[21], [22], [23]

3. **Anti-inflammation:** It refers to the properties of a drug or treatment that minimise inflammation or swelling. Anti-inflammation drugs, which reduce inflammatory, account for around half of analgesics. Opioids, on the other hand, influence the central nervous system and inhibit pain signalling to the brain.[24], [25], [26]

Advantage of Facewash:

1. Hydrated and robust skin.
2. Getting rid of dead skin cells
3. Wrinkles form more slowly[3]

Materials:**1. Neem:**

Fig 3: - Neem

Synonyms: Nimtree, Indian lilac, margosa.

Biological source: It consists of the fresh or dried leaves of *Azadirachta Indica*.

Family: Meliaceae

Geographical source: Asia, south America, Australia.

Properties: Antibacterial, Anti-fungal, Antioxidant, Antipyretic

Uses: treating skin condition, fighting sign of premature aging, reducing pigment and dark spots.[27]

2. Turmeric:

Fig 4: - Turmeric

Synonyms: saffron Indian, haldi, haridra.

Biological source: It consists of dried as well as fresh

rhizome of *Curcuma Longa* Linn.

Family: Zingiberaceae

Geographical source: India, Malaysia, west Pakistan and China.

Properties: Anti-inflammatory, Antioxidant, Antimicrobial

Uses: Improving skin tone, healing wounds, treating psoriasis and scabies.[28]

3. Tulsi:



Fig 4: -Tulsi Turmeric

Synonyms: Holy basil, Tulasi.

Biological source: It consists of the fresh and dried leaves of *Ocimum* species like *Ocimum Sanctum* L.

Family: Lamiaceae

Geographical source: North central India, Africa, America.

Properties: Antioxidant, Antimicrobial, Anti-aging, Antibacterial

Uses: Its help to reduce redness, itching, and other symptoms associated with skin conditions such as eczema.[40]

4. Aloe vera:



Fig 6: - Aleo Vera

Synonyms: Ghritakumari, Indian Aloe, Burn Aloe

Biological Source: It is the dried juice that is extracted through incision from the bases of leaves *Aloe barbadensis*.

Family: Liliaceae

Geographical source: North Africa, Europe, India.

Properties: Antiaging

Uses: It can help to relive sunburn, promote wound healing, reduce skin irritation, and improve overall skin health.[5]

5. Honey:



Fig 7: - Honey

Synonyms: Madhu, madh.

Biological source: It is a viscid and delicious secretion deposited in the honeycomb by several species of bees, including *Apis mellifera*.

Family: Apidae

Geographical source: India, USA, Australia,

Properties: Antibacterial, Antioxidant, Antimicrobial

Uses: It helps keep your skin hydrate

It will tighten the skin and keep it wrinkle-free.[29]

6. Rosewater:



Fig 8: - Rosewater

Biological source: It is obtained from Rose damascene.

Family: Rosaceae

Geographical source: Iran

Properties: Antiseptic, Antibacterial, Anti-inflammatory,
Antioxidant.

Uses: It helps lock in moisture and prevent dryness.

It can be used on all type of skin.

It can help decongest skin pores.[3], [5]

7. Coconut oil:



Fig 9: - Coconut Oil

Synonyms: Copra oil

Biological source: It is the oil extracted from the solid,
dried portion of the endosperm of *Cocos nucifera* L.

Family: Palmae

Properties: Antimicrobial, Anti-inflammation.

Uses: It can help to heal burn skin, soften skin.[30]

Methodology:

Consider the 10–30g herbal ingredients. Next, rose water and coconut oil were used to mix the herbs. Half of the final 100g of herbal facewash was combined with honey preserves.

To create the final herbal face wash, 30g of Neem powder, 20g of turmeric, 10g of Tulsi powder, 20g of aloe vera gel, 10ml of honey, 5ml of coconut oil, 5ml of carbopol420 or rosewater, and adequate gelatin powder were gradually combined while stirring continually side by side.

Before the last herbal face wash was presented for assessment, its solubility was verified by maintaining clarity.[24], [31], [32]

Evaluation Test:

1. Organoleptic properties

Several factors have been assessed for the creation of the face wash.

Colour: Examine the appearance of colour.

Odour: We sniffed the formulation to determine its odour.

Consistency: It being decided by hand.

Greasiness: It is decided by sensing it.[33]

2. Physicochemical properties

pH: A calibrated digital pH meter determines the pH of the formulation's 1% aqueous solution at a steady temperature.[34]

3. Evaluation of performance:

Washability: After applying the mixture to the skin, we examine the ease and extent of washing with water.

Foamability: We use a modest amount of formulation.

Grittiness: We test the formulation for gritty particles by applying it to the skin.[35]

Spreadability: There was a ground glass slide fixed on the wooden block. Two grams of the prepared gel placed on this ground slide. The gel preparation has been placed between this slide and a second glass slide that had the same measurements as the fixed ground slide. On the second glass slide, there is a hook. A 500 mg weight has applied to the two slides for five minutes in order to force out air and create a uniform gel layer between them. The pan, which was attached to the pulley, has been filled with a certain quantity of weight. Five centimetres have been moved by the top slide in a certain amount of time (in seconds). [36]

Formula for calculation of spreadability:

$$S=M*L/T$$

Where, S= spreadability, M= weight tied to the upper slide

L= length of the glass, T= time in sec.

Irritancy test for skin: A tiny quantity of the created formulation was applied to the left hand's dorsal side for ten minutes. Ten minutes later, agitation and Allergy responses were evaluated.[37], [38], [39]

Result and Discussion:

The review's findings support the effectiveness and safety of antibacterial polyherbal face cleansers for skincare. The considerable reduction in acne, inflammation, and antioxidant activity demonstrates the potency of these natural formulas.

Conclusion:

Since there are fewer side effects and perceived safety benefits over synthetic formulations, herbal ones are more widely accepted. The use of polyherbal medications for both medical and cosmetic purposes, including dermal preparations like polyherbal face washes, is becoming more and more popular worldwide. An analysis of global skincare market trends indicates that the usage of herbal products by consumers has grown dramatically in recent years. Using natural ingredients including Neem, turmeric, Tulsi, Aloe vera, coconut oil, rosewater, and honey, an attempt was made to make an herbal face wash in the current study. The formulations were then evaluated for the necessary criteria. Physical characteristics such as colour, smell, greasiness, pH, consistency, spreadability, washability, and Irritancy were assessed for prepared formulations. Turmeric gives compositions the necessary strength. Humectant activity is produced by honey during stability investigations. As a result, the spreadability of the preparations will be favourable. This signifies a simple skin application.

References:

- [1] S. Sonali, S. Pratiksha, and D. Punam, "FORMULATION AND EVALUATION OF HERBAL FACE WASH GEL," Certified Journal | Sinare et al. World Journal of Pharmaceutical Research 777 World Journal of Pharmaceutical Research SJIF Impact Factor 8.084, vol. 12, no. 10, pp. 777–783, 2023, doi: 10.20959/wjpr202310-28496.
- [2] N. Yadav, S. Maury, P. Yadav, K. Yadav, and M. K. Maurya, "A REVIEW ON :-FORMULATION AND DEVELOPMENT OF FACE WASH," JETIR, Jun. 2021. [Online]. Available: www.jetir.org
- [3] A. S. D. S. T. K. H. M. Abubakar Shaikh, "Formulation+And+Evaluation+Of+Herbal+FaceWash," interational journal of pharmaceutical sciences, vol. 2, no. 1, pp. 539–546, Jun. 2024, doi: 10.5291/zenodo.11543902.
- [4] A. Koli, M. Bhadalekar, G. M. Vidyasagar, and N. Chougule, "Formulation and evaluation of polyherbal facewash using betel leaf and Liquorice," ~ 209 ~ Journal of Medicinal Plants Studies, vol. 12, no. 4, pp. 209–213, May 2024, [Online]. Available: www.plantsjournal.com
- [5] B. Jahnvi Reddy, P. Shriya, N. Srilakshmi, and A. Professor, "Formulation Development and Evaluation of Herbal Face Wash," International journal of pharmaceutical research and application, vol. 9, no. 2, pp. 919–928, 2024, doi: 10.35629/7781-0902919928.
- [6] P. N. Dongare, Dr. R. L. Bakal, P. V. Ajmire, P. A. Patinge, M. P. More, and Dr. J. V. Manwar, "An Overview on Herbal Cosmetics and Cosmeceuticals," Int. J Pharm Sci Rev Res, vol. 68, no. 1, May 2021, doi: 10.47583/IJPSRR.2021.V68I01.013.
- [7] M. Banyal, "FORMULATION AND EVALUATION OF ANTI-ACNE HERBAL FACEWASH," Apr. 2023. [Online]. Available: <https://www.researchgate.net/publication/370102824>
- [8] A. Rasheed, G. A. K. Reddy, S. Mohanalakshmi, and C. K. Ashok Kumar, "Formulation and comparative evaluation of poly herbal anti-acne face wash gels," Pharm Biol, vol. 49, no. 8, pp. 771–774, Aug. 2011, doi: 10.3109/13880209.2010.547207.

- [9] "Formulation and Evaluation of Polyherbal Antiacne Face Wash for Management of Acne Vulgaris – IDAAM Publications." Accessed: Oct. 06, 2024. [Online]. Available: <https://www.idaampublications.in/formulation-and-evaluation-of-polyherbal-antiacne-face-wash-for-management-of-acne-vulgaris/>
- [10] S. Pise, F. Shaikh, and P. Vohra, "Formulation and Evaluation of Herbal Anti-acne Face Scrub," *Research Journal of Topical and Cosmetic Sciences*, pp. 53–57, Nov. 2023, doi: 10.52711/2321-5844.2023.00008.
- [11] R. B. Lambrud, K. P. Waghmare, S. Garje, and G. Sayyad, "International Journal of Research Publication and Reviews Formulation and Evaluation of Herbal Facewash Containing Plantain," 2024. [Online]. Available: www.ijrpr.com
- [12] A. O. Maske, M. Pandhare, and A. D. Wanjari, "International Journal of Advances in Pharmaceutics Formulation and evaluation of herbal face pack for glowing skin QR Code," *International Journal of Advances in Pharmaceutics*, vol. 08, no. 01, p. 8, 2019, doi: 10.7439/ijap.
- [13] Mr. Bhusan Gaykar, Mr. Rushi Ghute, Mr. Dhiraj Gadekar, and Mr. Sagar Sangale, "A Review On Formulation and Evaluation of Ubtan Facewash," *International Journal of Advanced Research in Science, Communication and Technology*, pp. 14–20, Dec. 2023, doi: 10.48175/IJARSCT-13902.
- [14] S. S. P. Hiremath et al., "Formulation and evaluation of a novel in situ gum based ophthalmic drug delivery system of linezolid," *Sci Pharm*, vol. 76, no. 3, pp. 515–532, 2008, doi: 10.3797/SCIPHARM.0803-17.
- [15] "Harisaranraj: Antimicrobial properties of selected... - Google Scholar." Accessed: Oct. 06, 2024. [Online]. Available: https://scholar.google.com/scholar_lookup?hl=en&volume=14&publication_year=%282010%29&pages=84-94&journal=Ethnobot+Leaflets&author=R+Harisaranraj&author=S+Saravanababu&author=K+Suresh&title=Antimicrobial+properties+of+selected+Indian+medicinal+plants+against+acne-inducing+bacteria
- [16] A. Desai and T. Patel, "Volume 12 Issue 4, April 2023 www.ijrsr.net Formulation of Guava Based Herbal Face Wash," *International Journal of Science and Research*, doi: 10.21275/MR23401091725.
- [17] M. Srinivas, D. Supriya, and Dr. A. Singh, "Current Review on Herbal Face Care," *Int. J Pharm Sci Rev Res*, pp. 101–107, Apr. 2021, doi: 10.47583/IJPSRR.2021.V67I02.017.
- [18] R. K. S, S. T. C, G. Bhargava, and G. Doddi Bus stop, "A REVIEW ARTICLE ON: HERBAL FACE WASH *Corresponding Author," *Certified Journal | Reshmi et al. World Journal of Pharmaceutical Research 716 World Journal of Pharmaceutical Research SJIF Impact Factor*, vol. 13, p. 453, 2024, doi: 10.20959/wjpr20249-32141.
- [19] B. Shubhangi, T. Sangrm, and S. Monali, "A REVIEW ON: FORMULATION AND EVALUATION OF POLY HERBAL FACIAL SCRUB," *www.irjmets.com @International Research Journal of Modernization in Engineering*, vol. 7147, [Online]. Available: www.irjmets.com
- [20] S. Sahu, H. Sharma, P. Sahu, R. Kumar Nema, and G. Kumar Sahu, "Acta Scientific Pharmaceutical Sciences (ISSN: 2581-5423) Formulation and Evaluation of Herbal Facewash," *Acta Scientific Pharmaceutical Sciences*, vol. 8, no. 6, pp. 00–00, Sep. 2023.
- [21] A. Gunjal, F. Hussain, M. Pathan, V. Mali, and A. Jadhav, "FORMULATION AND EVALUATION OF POLY-HERBAL ANTI-ACNE FACEWASH," *Int J Pharm Sci Res*, vol. 15, no. 1, p. 246, 2024, doi: 10.13040/IJPSR.0975-8232.15(1).246-52.
- [22] A. R. Yadav, "Formulation and Evaluation of Polyherbal Antiacne Face Wash for Management of Acne Vulgaris."
- [23] G. Bhaskar, S. Arshia, S. P.-P. magazine, and undefined 2009, "Formulation and evaluation of topical polyherbal antiacne gels containing *Garcinia mangostana* and *Aloe vera*," *phcog.com G Bhaskar, S Arshia, SRB Priyadarshini Pharmacognosy magazine, 2009•phcog.com*, vol. 5, Accessed: Oct. 06, 2024. [Online]. Available: <https://phcog.com/article/view/2009/5/19s/93-99>
- [24] J. D. Bhagwat, G. G. Bagwe, A. Aryan, H. D. Babar, P. B. Avhad, and Dr. S. Uppalwar, "Herbal Medicinal Plant Used in Facewash for Skin Care," *International Journal of Research Publication and Reviews*, vol. 5, no. 1, pp. 1542–1554, Jan. 2024, doi: 10.55248/gengpi.5.0124.0214.
- [25] "(PDF) Anti-acne Synergistic Herbal Face Wash Gel: Formulation, Evaluation and Stability studies." Accessed: Oct. 06, 2024. [Online]. Available: https://www.researchgate.net/publication/280741097_Anti-acne_Synergistic_Herbal_Face_Wash_Gel_Formulation_Evaluation_and_Stability_studies
- [26] S. A. Tiwari, K. K. Warghane, P. Waghmare, and N. P. Rumale, "A review on herbal face wash," *International Journal of Pharmaceutical Chemistry and Analysis*, vol. 10, no. 4, pp. 220–228, Dec. 2023, doi: 10.18231/J.IJPCA.2023.038.
- [27] R. Vidhya, B. Kathirvel, L. Vigneshwaran, and M. S. Kumar, "Review on natural and synthetic preservatives for herbal face wash formulations," *International Journal of Pharmacognosy and Life Science*, vol. 2, no. 2, pp. 11–14, Jul. 2021, doi: 10.33545/27072827.2021.v2.i2a.34.
- [28] V. Tayade, J. Tiwari, P. Vayde, S. Wagh, M. Yadav, and S. Sawale, "Review in Turmeric Facewash," 2024. [Online]. Available: www.ijrpr.com

- [29] S. B. Pathare, A. Nagarbhadiya, and I. -----, "Review on Formulation and Evaluation of Polyherbal Anti-Acne Face Wash," *International Journal of Pharmaceutical Research and Applications*, vol. 7, no. 3, pp. 640–647, Oct. 2022, doi: 10.35629/7781-0703640647.
- [30] R. Yadav and N. Yadav, "DEVELOPMENT AND EVALUATION OF HERBAL ANTIACNE FACEWASH." [Online]. Available: <http://www.ijcpa.in>
- [31] S. Jose, "A RESEARCH ON FORMULATION AND EVALUATION OF POLYHERBAL ANTI-ACNE FACEWASH," 2022. [Online]. Available: www.ijcrt.org
- [32] A. Rasheed, G. A. K. Reddy, S. Mohanalakshmi, and C. K. Ashok Kumar, "Formulation and comparative evaluation of poly herbal anti-acne face wash gels," *Pharm Biol*, vol. 49, no. 8, pp. 771–774, Aug. 2011, doi: 10.3109/13880209.2010.547207.
- [33] M. Sharma, S. Mayank, and R. Vikas, "Formulation development and evaluation of novel Poly-Herbal Anti-Acne gel," 2014. [Online]. Available: <https://www.researchgate.net/publication/286352406>
- [34] S. S. Bansode, J. D. Anap, S. S. Dhone, D. B. Pansare, and N. B. Pangavhane, "A REVIEW: HERBAL COSMETICS-SKIN AND HAIR," *International Journal of Pharmacognosy*, vol. 11, no. 5, pp. 182–189, 2024, doi: 10.13040/IJPSR.0975-8232.IJP.11(5).182-89.
- [35] M. Dattatray Iware, M. Ramchandra Kapse, D. Y. Bharat Patili, and G. Chavan, "FORMULATION AND EVALUATION OF POLYHERBAL SCRUB," *JETIR*, 2024. [Online]. Available: www.jetir.org180
- [36] K. Salunkhe, "REVIEW ON: ANTI-INFLAMMATORY HERBAL GEL OF BOSWELLIA SERRATA & VITEX NEGUNDO." [Online]. Available: www.ijpbs.com or www.ijpbsonline.com
- [37] D. P., D. G., and P. K. R., "Formulation and Evaluation of Herbal Facewash : A Step Towards Nature and a Boon to Skin," *International Journal of Newgen Research in Pharmacy & Healthcare*, pp. 22–27, Jun. 2023, doi: 10.61554/ijnrph.v1i1.2023.26.
- [38] Dr. jyoti gangwal Dr. sanjay kholiya, "Herbal cosmetic for skin and hair care in ayurveda," Dec. 2019. [Online]. Available: www.ijtsrd.com
- [39] B. Pharma, "Literature Review On Varieties Of Facewash," 2024. [Online]. Available: www.ijcrt.org
- [40] S. Chavan, S. Shinde, and N. Chougule, "Polyherbal antibacterial compact by using Tulsi, betel leaf and liquorice extract," ~ 238 ~ *Journal of Medicinal Plants Studies*, vol. 12, no. 4, pp. 238–243, 2024, [Online]. Available: www.plantsjournal.com