WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 13, Issue 8, 640-650. Research Article ISSN 2277–7105

PREPARATION AND EVALUATION OF POLYHERBAL SOAP

K. Vijay Kumar[1]*, B. Grace Angel[2], D. Jeevani[3], G. Pavithra[4], K. Shiva Kumar[5], K. Sowmya[6], M. Yashaswini[7] and V. Gopya Srivalli[8]

[1]M. Pharm, (Pharmaceutical Analysis), Associated Professor Dhanvanthari Institute of Pharmaceutical Sciences, Sujatha Nagar, Kothagudem.

[2-8]4th Year 2nd Semester Pharmacy Students of Dhanvanthari Institute of Pharmaceutical Sciences, Sujathanagar, Kothagudem, Bhadradri Dist-Telangana-507120.

Article Received on
26 February 2024,

Revised on 17 March 2024,
Accepted on 07 April 2024

DOI: 10.20959/wjpr20248-31913

***Corresponding Author**
K. Vijay Kumar
M. Pharm, (Pharmaceutical Analysis), Associated Professor Dhanvanthari Institute of Pharmaceutical Sciences, Sujatha Nagar, Kothagudem.

ABSTRACT

Polyherbal soap is a type of soap but contains combination of herbal extracts. The use of polyherbal soap has gained popularity due to its perceived effectiveness in treating various skin conditions. The formulation of polyherbal soap involves selecting and combination herbs based on their therapeutic properties and compatibility with soap making ingredients. Polyherbal soap are formulated by combining various herbal extracts or powders with a soap base. The soap base is typically made from oils, the herbal extracts or powders are added to the soap base during soap making process. The present aim is to formulate and evaluate the polyherbal soap by using different herbs such as Azadirachta indica, prunus communis linn, aloe barbadensis, curcuma longa and sapindus mukorossi gaertn & Evaluation various test such as colour, odour, shape, PH, foam retention, foam height and irritability test were conducted to know the effectiveness of the formulated Polyherbal soap. Several studies have been conducted to evaluate the effectiveness of polyherbal soap in treating skin conditions such as acne, eczema and psoriasis. These studies have shown promising results & We recommending that polyherbal soap is safe and effective to use & alternative when compared to conventional soap.

KEYWORDS: Herbal extracts, Evaluation, Skin condition, PH, Polyherbal soap.

INTRODUCTION

Skin

Skin is very important for all health care professionals to have basic information about the structure and function of human skin. Skin is also called cutaneous membrane. In adults the skin has a surface area ranging from 1.2 to 2.2m.[2] skin has two types, hair-bearing skin that covers much of the body and hairless skin as that of palms of hands and soles of feet.[1] skin is the most exposed part of the body to the sunlight, environmental pollution and also used to some protecting against the pathogen.

Most common skin diseases

1. Eczema
2. Acne
3. Rashes
4. Psoriasis
5. Allergy
6. Dry Skin & Urticaria

The requirements for the basic skin care

Cleaning agent: Which remove the dust, dead cells and dirt that choke the pores on the skin. Some of the common cleansers include vegetable oil like coconut, sesame and palm oil.

Toners: The toners help to tighten the skin and keep it from being exposed to many of the toxins that are floating in the air or other environmental pollutants. Some of the herbs used as toners are witch hazel, geranium, sage, lemon, ivy burdock and essential oils.

Moisturizing: The moisturizing helps the skin to become soft and supple. Moisturizing shows a healthy glowing skin.

Herbal cosmetics

The word cosmetics was derived from the Greek word “Kosm tikos’’ meaning having the power, arrange, skill in decorating.[2] The herbal preparations containing phytochemical from a variety of botanical source which influences the functions of skin and provide nutrients necessary for the healthy skin. The natural herbs and their products when used for their aromatic value in cosmetic preparation are termed as herbal cosmetics.[3-5]

In ancient times the written information on Ayurveda like charaka samhitha and varnya kashaya has explained the usage of herbs in getting glowing complexion. These ayurvedic herbs are used to purify blood and eliminate doshas from the body as they are mainly responsible for skin disorders and other diseases. Some of the natural products used in ancient times include aloe as a skin protectant haldi as face pack. The use of ayurvedic herbs adds cosmetic value to the products. The Ayurveda is well known for the permanent cure for ailments and it is likely evident from the present market trends that the herbal cosmetic product will succeed in capturing the market. The knowledge about the structure and basic function of the skin and its appendages and knowledge of natural or herbal care or remedies for its problems will help to widen the importance of herbal cosmetics. The skin has the natural ability in continuously repairing to maintain its normal function. In young age the common skin problem are greasy skin and acne and during old age the skin become dry. To have a better skin, it is important to understand how our skin functions and to take care proper precautions to maintain it.

Herbal soap

Herbal soap preparation is a medicine it contain anti-bacterial, anti-ageing, anti-oxidant, anti-septic properties which mainly uses of part of plant like seeds, rhizomes, nuts and pulp to treatment for an injury or disease or to achieve health.[6] Herbal soap do not contain the artificial colours, flavours, fluorides etc., when compared to the content of commercial soap.[7] Herbs are the natural products mostly found in the treatment of almost all diseases and skin problems owing to their high medicinal value, cost effective ness, availability and compatibility.[8]

Azadirachta indica is one the best tree in India, which known for its medicinal properties. In fruits and seeds are the source of neem oil. It is used to treat most few common problems that the people face.[9]

The Aloe vera has been known and used for centuries for its health, beauty, medicinal and skin care properties. Nowadays most frequently aloe vera used in the field of cosmetology. Aloe vera contain 75 potentially active constituents.[10]

Curcuma longa having properties like photo protection, anti-ageing, anti-wrinkle, moisturizing, anti-oxidants, astringent, anti-microbial and anti-inflammatory activity. Recent

studies demonstrate that the curcumin is excellent for wrinkles and can control the inflammation and the formation of free radicles.[11]

In recent studies a growing interest in biology and medicine has been focused on oxidative stress from the view point of its participation in several disease such as cancer, ageing and arteriosclerosis.[12]

Almond oil has been used for hundreds of years to treat dry skin conditions, including eczema and psoriasis. The oil may reduce the appearance of acne, enhance cell development and reverse sun damage.[13]

During COVID-19 pandemic the frequent and increased use of synthetic hand washing products may result in cellular damage. Using synthetic components in soap has caused severe health concerns for human and the ecosystem. So, the polyherbal soap formulated from natural sources to reduce the environmental effect and improve public health.

MATERIALS AND METHODS

Neem

Family: *Meliaceae.*

Botanical name: *Azadirachta indica.*

Parts: Seeds

Chemical constituents: Azadirachtin, Glycerides, polyphenols

Neem oil: It is known as ‘’margosa oil’’. Pressed from fruits and seeds of neem.

Use: Anti-septic, anti-fungal, anti-histamine.

Rose

Family: *Rosaceae*

Botanical name: Rosa Rubiginosa

Rose oil: It is extracted from the petals of various type of roses.

Uses: Nourish, hydrated, heal the skin.

Aloe vera

Family: *Liliaceae*

Botanical name: *Aloe barbadensis [miller]*

Parts: Pulp

Chemical constituents: c-glucosides, anthraquinones

Aloe vera gel: It is obtained from the leaves of aloe vera

Uses: Skin conditions used for skin burn, dry skin, rashes, allergies.

Almond

Family: *Rosaceae*

Botanical name: *Prunus Amygdalus vardulsis*

Parts: Nuts

Chemical constituents: Proteins, lipids, tannins, amino acids

Almond oil: It is obtained from by pressing nuts or fruits. In order to acquire the oil.

Uses: help soothe and hydrate your skin. Help to balance the absorption of moisture and water loss.

Multhani mitti

Commonly known as fullers earth. It is a bleaching clay.

Uses: Used to treat oily skin, acne, blemishes. It is a mineral product.

Turmeric

Family: *Zingiberaceae*

Botanical name: *Curcuma longa*

Parts: Rhizomes

Chemical constituents: Curcumin, Zingiberene

Uses: Anti-bacterial, anti-microbial, anti-septic.

Soap nuts

Family: Soapberries

Botanical name: Soapindus mukorossi gaertn

Part: Fruits

Chemical constituents: Saponins.

Pharmacognostical profile of active ingredients[14,15,16,17]

Table no. 1: Pharmacognostical profile of active ingredients.

S. No.	Name	B. Source	Part	Chemicalconstituents	Uses
1	Neem	Azadirachta indica	Seeds	Azadirachtin, Glycerides, Polyphenols, Triterpenes	Anti-bacterial, anti-septic
2	Aloe vera	Aloe barbadensis	Pulp	Polymannas, anthroquinone	Moisturizer and anti-ageing.
3	Almond	Prunus communis	Nuts	Protein, Lipid, Tannins, linolenic acid, Amino acids.	Anti-oxidant
4	Turmeric	Curcuma longa	Rhizomes	Curcumin, zingiberine	Anti-septic and anti-inflammatory.

Soap base formulation

Table no. 2: Soap base ingredient list.

S. No.	Ingredient	Quantity	Use
1	Coconut oil	75gm	Anti-ageing, moisturizer
Source	**Parts**	13.28gm	Lye
3	Stearic acid	5gm	Hardness
4	Distilled water	24.75gm	Aqueous vehicle

Preparation of soap base

Cold process method

For the preparing soap base take 75ml of coconut oil in a 500ml beaker. Place it on the water bath boil the liquid up to forming strong thickness under the temperature 40-45^{0}c with stirring. And monitor the temperature level by using thermometer. Then take NaoH (Caustic soda) or lye was weighed into a clean beaker and add into a distilled water, again maintain the temperature by using thermometer. Add this solution to the coconut admixture, and add stearic acid to the mixture boil at 40-45^{0}c up to formation of base consistency. Then the mixture can be transferred into soap moulds and keep it in the freezer up to 2-3 hours and then after 2-3 hours remove the soap containing mould from the freezer and allow to 5 minutes without disturbance. Then soap will be formed.[18]

Procedure for preparation of polyherbal soap

For preparing polyherbal soap take the required soap base in a 500ml of beaker and maintain the temperature at 45^{0}c to heat the soap base on the water bath without stirring. Then the soap base will be converts into liquids form and also add the ingredients to the above mixture. Boil the mixture at 45^{0}c on the water bath to obtain proper mixture without stirring. Then the mixture poured into the soap moulds and freeze the soap containing moulds up to 2 to 3 hours. After 2 to 3 hours remove the soap moulds from the freeze allow to 5 minutes then soap will be formed.[18]

Table no. 3: Formulation of poly herbal soap.

S. No.	Ingredients	F1	F2	F3	F4	F5	Uses
1	Soap base(gm)	40	50	60	70	80	Remove dirt from skin
2	Aloe vera gel(gm)	1	1.5	2	2.5	3	Anti-oxidant, anti-bacterial
3	Neem oil(ml)	1	1.5	2	2.5	3	Skin conditioner, anti-bacterial
4	Almond oil(ml)	1	1.5	2	1	2	Anti-oxidant
5	Turmeric(gm)	0.5	0.5	1	0.5	1.5	Anti-oxidant

6	Multhani clay(gm)	1	1	1	1	1	Remove oil from skin
7	Rose oil(drops)	2	2	2	3	3	Perfume
8	Soap nuts water(ml)	5	5	6	7	10	Foaming agent

Evaluation parameters

Colour and Shape: The colour and shape was checked by naked eye.

Odour: The smell of formulation was checked by applying formulated soap on hand and feel the fragrance of perfume.

PH: The PH of the prepared soap was assessed by touching a PH strip to the freshly formulated soap and jointly by dissolving 1 gram in 10ml water with the help of digital PH meter.

Foam height: 1gm of sample of soap was taken dispersed in 25 ml distilled water. Then transferred it into 100ml measuring cylinder, volume was make up to 50ml with water. 25 stocks were given and stand till aqeous volume measured up to 50ml and measure the foam height, above the aqeous volume was measured.

Foam retention: 25ml of 1 gm soap solution was taken into a 100ml graduated measuring cylinder. The cylinder was covered with hand and shaken 10 times. The volume of foam at 1-minute intervals for 4 minutes was recorded.[19]

Irritation: It is carried out by applying formulated soap on the skin for 5 minutes if no irritation then it is considered as Non-irritant product.[20]

RESULT AND DISCUSSION

S. No.	Parameters	F1	F2	F3	F4	F5
1	Colour	Paleyellow	Paleyellow	Yellow	Paleyellow	Yellowish brown
2	Odour	Aromatic	Aromatic	Aromatic	Aromatic	Aromatic
3	Shape	Oval	Oval	Oval	Oval	Oval
4	PH	6.6	6.8	6.9	7.0	7.2
5	Foam height	7cm	7cm	7.5cm	8cm	10cm
6	Foam retention	3min	3min 10sec	3min 19sec	3min 25sec	3min 51sec
7	Irritation	Nonirritant	Nonirritant	Nonirritant	Nonirritant	Non irritant

The above given table describes the colour, odour, shape, irritation, foam height and foam retention of the poly herbal soap. The colour of all the five formulation were brown. The odour of all the five formulation was aromatic. The shape of all the five formulation was oval. As per evaluation test formulation F5 is may be the most standard formulation compared to other formulation. There is no irritation beside foam retention and foamability of F5 is may be much better than other formulations.

CONCLUSION

The prepared polyherbal soap was formulated by using cold process technique with anti-oxidant and anti-bacterial properties. The anti-bacterial and anti-oxidant properties may be exhibit due to presence of Azadirachtin and Amygdalin. The designed formulation F5 consisting 80gm of soap base, 3gm gel of Aloe barbadensis, and 3ml oil of Azadirachta indica was found to be very effective & showing promising results hence polyherbal soap is having anti-bacterial and anti- oxidant properties. The further clinical studies of this formulation have to be done & this formulation By performing the above evaluation parameters we came to an conclusion that. polyherbal soap possess less chemicals and are more eminent than synthetic soap. Thus, in this research work, the prepared polyherbal soap possess a wide variety principles that can be used to Improve beauty regime.

ACKNOWLEDGEMENT

It Affords us an Immense pleasure to acknowledge with gratitude the help and able guidance rendered to us by a host of people, to whom we owe a substantial measure for the fulfilment of this project work. Many people supported our efforts through this dissertation directly or indirectly and we would like to take this opportunity to thank them all for their assistance.

We would like to thank and express our sincere gratitude to our guide ***K.Vijaykumar M. Pharm, Pharmaceutical Analysis, Asst. Professor,*** Dhanvanthari Institute of Pharmaceutical Sciences, for his Continuous encouragement and untried efforts throughout the project period. We thankful for his Continous support, guidance, patience and motivation to take up our tasks.

We are gratefully thanks to ***Dr. Nagraju, M.Pharm, PhD***. Principal, Dhanvanthari Institute of Pharmaceutical Sciences, Kothagudem, for giving us an opportunity to carry out the research work his guidance and supervision at every stage of this thesis work.

With deep gratitude we would like to thank ***Dr. A. Bhaskar*** our respected Chairman of Dhanvanthari institute of Pharmaceutical Sciences, Kothagudem, for providing tremendous opportunity to do this project in this esteemed organization and thereby making our dream of higher education possible.

We thank all our beloved friends especially and all our classmates for their indirect help in completion of this dissertation work.

We would like to thank our *Beloved Parents* without whom We could not able to complete our work successfully for their blessings and everlasting support.

REFERENCES

1. Barkat Ali Khan et al., Review Article; Human Skin, ageing and anti-oxidant; Journal of medicinal plant Research, January, 2012; 6(1): 1-6.
2. Hughes, G. R., J. Soc. cosmetic. Chem, 1959; X: 159.
3. Kapoor. V.p., herbal cosmetics for skin and hair care, natural product radiance. harry R.G, In: modern Cosmeticology, Zrevision Eds), Wilkinson J.B., Clark.R., Mclaughlin T. P. Leonard hill (books) Ltd, London, 1962; 1: 306-314.
4. Sankholkar. D.S, Current Regulations and Suggested way Forward, The pharma times, 2009; 41, 8: 30-31.
5. Ashlesha Ghanwat, Sachin Wayzod and Vanjire Divya; Research Article; Formulation and Evaluation of Herbal soap; Current Trends in Pharmacy and Pharmaceutical Chemistry, April, 2020; 2(2): 21-26.
6. Deepa G., Nikhil M. Research Article; Phytochemical, antioxidant, and antimicrobial activity of psidiumguajavaleaves against oral dental pathogens; Indian Journal of Applied Research, June, 2015; (5)6: 52-54.
7. Saikia A.P., Ryakala V.K., Sharma P., Goswami P., Bora U; Ethnobotany of medicinal plants used by Assamese people for various skin ailments and cosmetics. Journal of Ethnopharmacology, June, 2006; 106(2): 149-157.
8. Book of Neem Oil from Neem Seeds and Applications: Shovon Bhattacharjee, Muhammed Miah, 2013; 1-113.
9. Amar Surjushe, Resham Vasani, and D G Saple; A Short Review; Aloe Vera; Indian Journal of Dermatology, February, 2008; 53(4): 163-166.
10. Swarnlata Saraf, Gunjan Jeswani, Chanchal Deep Kaur and Shailendra Saraf; Research Article; Development of novel herbal cosmetic cream withCurcuma longa extract loaded

transfersomes for Anti-wrinkle effect; African Journal of Pharmacy and Pharmacology, August, 2011; 5(8): 1054- 1062.

11. Ali Jahanban Esfahlan, Rashid Jamei, Rana Jahanban Esfahlan; Review Article; The importance of almond (Prunus amygdalus L.) and its byproducts; Article in food chemistry, 2010; 349–360.
12. https://www.healthline.com/health/beauty-skincare/almond-oil-forface#:~:text=Almond%20oil%20has%20been%20used,Helps%20reverse%20sun%20damge.
13. GARIMA PANDEY, KK VERMA, MUNNA SINGH; Research article; Evaluation of Phytochemical, Antibacterial and Free Radical Scavenging Properties of Azadirachta Indica (Neem) Leaves; International Journal of Pharmacy and Pharmaceutical Sciences, 2014; 6(2): 444-447.
14. Malik Itrat, Zarnigar; Review Article; ALOE VERA: A REVIEW OF ITS CLINICAL EFFECTIVENESS; International research journal of pharmacy, 2013; 4(8): 75-79.
15. https://en.m.wiki.org/wiki/almond
16. K.K.Mueen Ahmed, B. M. Gupta, Ritu Gupta; Curcuma longa (Medicinal Plant) Research: A Scientometric Assessment of Global Publications Output during 1997-2016: Pharmacognosy Journal, 2018; 10(5): 998-1006.
17. G. Sucharita, V. Ganesh, B. Siva Krishna, D. Sireesha, S. Pavan kumar, N. Sai Sasidhar, S. Revathi, Dr. P. Venkatesh, Research Article; Formulation and Evaluation of Poly Herbal AntiBacterial Soap; IJESC, 2020; 10(8): 27165-27173.
18. Zeeshan Afsar and Salma Khanam; Research Article FORMULATION AND EVALUATION OF POLY HERBAL SOAP AND HAND SANITIZER; International Research Journal of Pharmacy, 2016; 7(8): 54-57.
19. Kuril.M, Yadav Y, Sahi A.K, Shukla.K; Research article; Formulation and evaluation of polyherbal paper soap; Journal of innovation and invention in pharmaceutical sciences, 2020; 1(1): 54-57.