International Journal of Research in Pharmacology & Pharmacotherapeutics (IJRPP)

IJRPP |Vol.14 | Issue 3 | Jul - Sept -2025 **www.ijrpp.com**

ISSN: 2278-2648

DOI : https://doi.org/10.61096/ijrpp.v14.iss3.2025.297-302

Research

Formulation and Evaluation of Polyherbal Pigmentation Skin Serum

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Published on: 10 July 2025

Published by:
Futuristic Publications

Abstract

A novel poly herbal skin serum was formulated for depigmentation, using *Psoralea corylifolia* (*Bakuchi*) seed extract as the key active ingredient. The serum base included green tea extract, glycerine, niacinamide, Tween 20, sodium benzoate, and lavender oil. Three batches (F1, F2, F3) with 15%, 12%, and 10% Bakuchi extract respectively were prepared and evaluated. All batches were stable and non-irritating over 30days. The 15% Bakuchi formulation (F1) showed the highest efficacy in reducing dark spors and improving skin moisture in volunteer tests. These results suggest that the *Bakuchi*-containing serum can safely ligten hypo pigmented skin areas while providing hydration, offering a natural alternative to conventional chemical depigmenting agents.

Keywords: *Psoralea corlifolia*, skin pigmentation, herbal serum, tyrosinase inhibition, antioxidants, depigmentation.

1. INTRODUCTION

A skin serum is a type of skincare product designed to directly supply the skin with powerful nutrients. It can be applied to the skin prior to moisturizing but following cleansing. Serum is particularly well-suited for this function science it contain microscopic molecules that can deeply penetrate the skin and provide a very high concentration of active ingredients. They are therefore a great tool for treating specific skincare problems, such as pigmentation and signs of aging. Much of the body is covered by the epidermis and dermis, the two layers of human skin. The hypodermis is third layer of the skin. The function of the skin include regulating the body temperature, breaking down and getting rid of biochemical waste, and protecting the body from radiation and environmental stimuli like light, heat, cold, and chemicals. Normally, our skin is extremely smooth but when it became rough, we have to apply makeup. Cosmetic are any products used to clean beautify, increase attractiveness,

or change appearance of all the kind of cosmetics, people use skincare products. The most important place to apply makeup is the face. They have controlled the cosmetics market for a few years, and their market is still growing. Cosmetic come in a wide variety, and each one has a special purpose for the skin. Dull and non-glowing skin can be caused by a number of things, but serum can help. Scrubber is the process of eliminating dead skin cells from the skin surface. Generally speaking, skin serum can be made from oil-based products that contains tiny exfoliating particle. In the current cosmetics are safe for use on all skin types. The formulation of herbal skin serum depends upon the antioxidant properties of the herbs used. An antioxidant, which means "against oxidation" shield living organism from damage caused by the uncontrolled production of reactive oxygen species.

Serum

Serum is concentrated product widely used in cosmetology. The term come itself from professional cosmetology.

Cosmetic Serum

Cosmetic serum is highly concentrated based on water or oil as any other cream. A serum, or other concentrated product containing ten times more of biologically active substance than creams, therefore quicker and more effectively coping with cosmetic problems.

Different Types Serum And Their Features

Table 1: Types of Serum And Their Features

TYPES	TECNOLOGY	FEATURES
Transparent Or semi - transparent Lotion type	Solubilization, Micro emulation, Liposomes, Disc like capsule.	In general contains more humactant than lotion.the texture may be adjusted through the selection of humactant and water soluble polymer and varing there combination. This is most general form of serum preparation.
Emulsion type	O/W type W/O type W/O/W type	As the type contain large amount of emollient, it is suitable for preparation containing large amount of U.V. absorber and oily ingredients. The w/o type is suitable for preparation requires water repellence.
Oil type		In which, the texture is adjusted by solid or semi solid oils,and animals fats or plants oils in different proportions. As texture of this type is not good as that of other preparation it is disappearing from market
Two agent mix together type	In addition to above, spray dry, freezedry , Microcapsule technology are used.	In order to prevent instability in pharmaceutical agent and preparation or to affect a visual Change two agents are mixed together to use. They are liquid-liquid or liquid powder combination.

2. AIM AND OBJECTIVES

The present study was undertaken to formulate and evaluate the poly herbal pigmentation skin serum The present study was designed to determine the pharmacogenetic, physiochemical parameters and phytochemical screening of psoralea corylifolia linn (bakuchiol) The present investigation aim to evaluate the pharmacogenetic study such as morphology, macroscopic, microscopic, transverse section (T.S) of leaf and powder characterization of bakuchi Physiochemical parameter such as loss of drying, total ash content, sulphated ash, acid insoluble ash, and extractive values determined Phytochemical parameters of bakuchi plant were analysed in accordance with ayurvedic pharmacopeia of India.

3. METHADOLOGY

3.1 COLLECTION AND AUTHENTICATION

The materials used in the present study were purchased from the local market, dried and powdered for further use. The below mentioned are the details of the plant material used for the formulation of skin serum.

AUTHENTICATION OF PLANT MATERIALS: Plant materials was authenticated by Dr. V RAVI, M.Sc., Ph.D., Assistant Professor &Head PG& Research Department of Botany Government Arts College for Men Krishnagiri-635001.Tamil Nadu, India.

3.2 EXTRACION PROCESS

DECOCTION EXTRACTION METHOD

In this study, decoction extraction is used for aqueous extract of seed of psoralea corylifolia linn (bakuchi) Decoction extraction involves boiling plant material in water to extract soluble compounds, typically used for hard plant parts like roots seed and bark, then straining and cooling the resulting liquid.

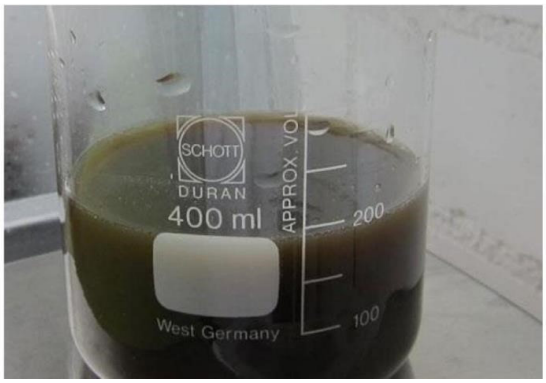

Fig 1: Aqueous Extraction Of Seed Of Psoralea Corylifolia

4. FORMULATION:

4.1 Ingedients For Serum Formulation

Table 2: Drug and Exicipient Profile

S.NO	NAME OF THE INGREDIENT	CATEGORY
1	Psoralea Corylifolia	Anti-aging, antioxidant, and antiinflamatory properties.
2	Camellia Sinesis	Protects against UVB damage
3	Tween 20	Functions as a surfactant, emulsifier, and solubilizer.
4	Glycerine	Humectant
5	Niacinamide	Skin-brightening, anti-aging, and acne fighting properties
6	Sodium benzoate	Preservative

4.2 Formulation Of Herbal Skin Serum

Table 3: Formulation of Herbal Skin Serum

S.NO	INGREDIENTS	F1	F2	F3
1	Bakuchi extract	15ml	12ml	10ml
2	Green tea extract	5ml	5ml	5ml
3	Glycerine	6.5ml	8ml	10ml

4	Tween 20	2ml	2ml	2ml
5	Niacinamide	0.5gm	0.5gm	0.5gm
6	Sodium benzoate	0.1gm	0.1gm	0.1gm
7	Lavender	1ml	1ml	1ml

4.3 METHOD OF PREPARATION

The emulsion (o / w) was prepared according to the formula given below. The oily component consisting of Bakuchi extract, Lavender oil and tween 20 is mixed together for 10 minutes to obtain a uniform solution. At the same time the water phase was prepared by mixing Niacinamide, glycerin,Sodium benzoate and a small amount of distilled water uniformly. The oil phase is added to the liquid phase by drop wise under mechanical vibration at 2500 rpm to obtain oil in water based on biphasic emulsion.

Fig 2: Oil In Water Serum

5. EVALUATION CRITERIA

1. PHYSIOCHEMICAL EVALUATION STUDIES

Physicochemical parameters were determined as per guidelines of WHO. Loss on drying, total ash value, Sulphated ash, Acid insoluble ash and extractive values were determined. Determination of Loss on Drying (LOD): Weigh about 1.0 gm of powdered drug into a weighed china dish. Dry in the hot air oven at 105°C, until two consecutive weighing do not differ by more than 0. 5 mg. Cool in a desiccator and weigh. The weight after drying was noted and loss on drying was calculated. The percentage was expressed as % w/w with reference to air dried sample.

A) Determination Of Total Ash Value

Weigh about 1.0 gm of sample in previously dried and weighed china dish, Heat the china dish carefully over a small flame to char the material, ignite in a muffle furnace at 550 ± 25°C. Grey ash is obtained, cool in desiccators, if wetting show ash to be carbon free, remove dish from desiccator, weigh the dish and repeat the operations for two successive weighing. Record the lowest mass, calculate the result.

B) Determination Of Sulphated Ash

Take 1.0 gm of powdered drug in an accurately weighed china dish, ignite gently at first until the substance is thoroughly charred. Cool, moisten the residue with 1ml of sulphuric acid, heat gently until white fumes are no longer evolved and ignite in muffle furnace at 800°C ± 25°C until black particles have disappeared. Allow the china dish to cool, add a few drops of sulphuric acid and heat. Ignite as before, allow to cool and weigh. Repeat the operation until two successive weighing does not differ by more than 0.5 mg.

C) Acid Insoluble Ash Value

Refer to the total ash procedure till ashing, add 25ml of dilute hydrochloric acid. Heat on a water bath for 10 minutes, cool and filter the contents of the dish, wash the filter paper with water until the washings are free from the acid, after the filter paper is free from the acid, Return the filter paper in a china dish, keep it in an oven at 100± 2°C for 3hours, ignite in a muffle furnace at 550 ± 25°C for one hour, Cool the china dish in a desiccators and weigh. Repeat this process for two successive weighing. Record the lowest mass, Calculate the result.

2. ORGANOLEPTIC PROPERTIES

A) Colour- The colour of formulation was checked manually and observed.

B) Odour- The smell of formulation was checked by applying preparation on hand and feels the fragrance of perfume.

C) Consistency- The consistency of the formulation and particles were used to check the texture and homogeneity of preparation on the skin such as stiffness, grittiness, Greasiness effect.

D) Homogeneity and texture- It was tested by pressing a small quantity of the formulated scrub between the thumb and index

E) PH- 1% of solution of sample was measured by using a digital pH meter at constant temperature.

3. SPREADABILITY

A small quantity of sample was placed on a glass slide and another slide was placed above them;100 g of weight was placed on the slide. The time taken for the gel to spread on the slide was noted and measured.

It was calculated by using following formula:

$S=M\times L/T$

Were,

S= Spreadability m=Weight placed on slide l=Length of the glass slide

t= Time taken in seconds

4. **EXTRUDABILITY:** Small amount of gel was taken into a collapsible ointment tube. One end closed and the other end kept opened. Slight pressure was applied on the closed side. The time taken to extrude and the amount of gel extruded was noted.
5. **VISCOSITY:** DVE Model Brookfield viscometer was used to measure the viscosity of our sample. Viscosity of sample and water were taken in centipoises at 60 rpm.
6. **WASHABILITY:** Little quantity of gel was applied over the skin and was washed with water.
7. **IRRITABILITY:** Small quantity of the preparation was applied on the dorsal part of hand and kept for few minutes
8. **FOAMABILITY:** Small amount of scrub was shaken with water in a graduated measuring cylinder and foam was measured.

6. RESULTS AND DISCUSSIONS

S.NO	PARAMETER	F1	F2	F3
1	Colour	Brown	Brown	Brown
2	Odour	Aromatic	Aromatic	Aromatic
3	Consistency	Semisolid	Semisolid	Semisolid
4	Homogeneity	Good	Good	Good
5	PH	4-6	4-6	4-6
6	Spread ability	4.34±0.005	4.55±0.0017	4.60±0.02
7	Viscosity	240±0.5 cp	250±0.5 cp	320±0.5 cp
8	Wash ability	Good	Good	Good
9	Irritability	Non-irritant	Non-irritant	Non-irritant

Present study was conduct with a view to formulate and evaluate on dark spots on face for formulation using Bakuchi seed extract. The serum was prepared with natural active agents. The moisture content of skin increases with the continuous use of product. In the present work de-pigmentation formulation gave satisfactory good moisturizing, antioxidant property and this is achieved by the use of natural actives like Bakuchi seed extract. The serum was prepared by the conventional procedure and all the factors, parameters such as pH, viscosity, stability, microbial analysis were determined. It was also kept accelerated by stability testing for 30 days. The moisturizing property was determined by konometer and conductivity method. Then the product i.e. serum was applied on human volunteers and progressive effective result were found. Thus photographs of before application

and after application was taken out from photographs Thus the formulation M1 of serum containing 15% Bakuchi seed extract were found stable and gave most effective results.

7. CONCLUSION

At present because of availability of wide range of cosmetic products in market, consumers are giving special attention towards the selection of cosmetic product to develop a well standard formula, the new product viz. herbal de-pigment serum was formulated by incorporating active extract singly and also in combination for good effect. Thus, M1 of serum with Bakuchi seed extract were found to be most effective and stable. Thus, conclusion can be made that the serum containing Bakuchi seed extract have been able to remove dark.

8. BIBLIOGRAPHY

1. Aglawe et al., Preparation and evaluation of poly herbal facial scrub. Journal of drug delivery and therapeutics, 2019; 9(2):61-63.
2. Gabriella Baki and Kenneth‟s Alexander. Introduction to cosmetic formulation and technology in 2015
3. Vishal Ashok Chaudhari, Manoj V. Girase, Bhushan Gulab Borase, Shashikant Kailas Bhoi, Kalyani Ashok Chaudhar."Formulation and evaluation of multipurpose herbal scrub in gel form using Limonia acidissima", IJRAR - International Journal of Research and Analytical Reviews (IJRAR), 2020; 7(2):637-649
4. J.B. wilkinsome and R.J. Moore, Harry Cosmetology, Longman Singapore, Publication Edition VII Page, 3,8,265,410-62-64.
5. Shlomo Nagdassi, Ekta, Toultou, Novel Cosmetic Delivery System Page No. 72.
6. Takeo mitsui, New Cosmetic Science, Page 45,321.
7. Cosmetology – Theory and practical Research Test Method analysis formulas Vol.II,Ed. Karlheinz Scharader and Andreas, Domsch.Sagrine text book of cosmetic tech., Vol.2, page No.27
8. Cotelle, N., Bernier, J.L., Henichart, J.P., Catteau, J.P., Gaydou, E. and Wallet, J.C.: Free Rad.Biol. Med., 13: 211-219 (1992).
9. Radi, R., Beckman, J.S., Bush, K.M. and Freeman, B.A.: Arc. Biochem. Biophys. 288: 481-487. (1991).
10. Nishikimi, M., Rao, N.A. and Yagi, K.: Biochem. Biophy. Res. Comm. 46: 849-864 (1972).
11. Nawar, W. W.: Lipids (O.R. Fennema ed.) Food Chem. New York: Marcel Dekker Inc. 3rd ed.,pp. 225-319 (1996).
12. Pietta, P.G.: J. Natural Products, 63: 1035-1042 (2000).
13. Yu, L., Haley, S., Perret, J., Harris, M., Wilson, J. and Qian, M. J.: Agric. Food Chem., 50: 1619-1624 (2002).