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FORMULATION AND EVALUATION OF ANTI-AGEING CREAM OF ROOT EXTRACT OF *CENTELLA ASIATICA*

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ABSTRACT

Southeast Asian nations frequently employ *Centella asiatica*, also known as *Centella asiatica* (L.) Urb. or gotu kola, which is a traditional Chinese herb with a wide range of medical benefits. It has been noted that the medicinal plant *Centella asiatica* (L.) Urban, sometimes known as Gotu kola, exhibits a variety of pharmacological properties. The aim of the present research work is formulation and evaluation of anti-ageing cream from the root extract of *Centella asiatica Linn.* The extract was subjected to qualitative chemical test for the identification of various chemical constituents by following standard protocol, and contains secondary metabolites. The Herbal cream was prepared and further evaluated for various evaluation parameters such as physical properties, determination of pH, spreadability, washability, greasiness, phase separation, irritancy test. The herbal creams show the good physical appearance with smooth consistency, pleasant odour, and semi-solid state. Chemical based cosmetics are harmful to the skin and an increased awareness among consumers for herbal products triggered the demand for natural products and natural extracts in cosmetics preparations. The increased demand for the natural product has created new avenues in cosmeceutical market. The natural content in the botanicals does not cause any side effects on the human body; instead enrich the body with nutrients and other useful minerals.

INTRODUCTION

'Herb' is a specific term in the botanical literature, which applies strictly to non- woody vascular plants, such as the annual, biennial and some perennial crops (including most of the monocot species), which do not have persistent woody stems. However, in the world of pharmacy, the term is used in a wider sense, like a synonym of 'plant', and covering all herbs, shrubs and trees. The term Herbal medicine (also called Botanical medicine or Phytomedicine), Encompasses all those medicinal products, Which are prepared by using plants, plant parts or plant products, with a minimal or no chemical manipulation. Since plants possess diverse medicinal properties because of having some specific active ingredients, different organs of the same plant species may be effective against different diseases, or in some cases, if one organ has a healing effect, the other may be toxic, due to the presence of different active ingredients [1-4]. All living or non-living things in the world experience aging effect, undergo wear and tear due to

environmental impacts, and are subject to decay/death. Drugs are no exception. Quality and stability of compound formulations have long been a neglected aspect in the trade of herbal medicine. Good manufacturing practices (GMP) need to be applied to the production of compound herbal drugs. Stability of drug substances and drug products is a critical feature in the process of drug development, based on which a shelf life for pharmaceutical products is established and storage conditions are recommended [5-7]. Creams are semi-solid emulsion of oil and water.Cream consists of medicaments dissolved or suspended in water removable or emollient bases, classified as water-in-oil or oil-in-water intended for application on the skin or accessible mucous membrane to provide localized and sometimes systemic effects at the site of application.Herbal creams are emulsions which includes both oil and water. They may contain things like neem, papaya, aloe vera, Tulsi, and turmeric. Different tinctures, extracts, and essential oils can be found in herbal creams. Vitamins and minerals are natural nutrients found in herbal creams, which are free of synthetic additives that might be toxic. Vast types of plants and plant products are used in manufacturing of different types of herbal creams which are intended for different aims of applications [8,9]. *Centella asiatica*, commonly known as Gotu Kola, is a perennial herb native to Asia. This plant has been used for centuries in traditional medicine, particularly in Ayurvedic and Chinese medicine, to promote overall health and well-being [10-12].

Advantages: Ease of application, Easy to utilize. Steering clear of danger, There is no special risk or technician needed for application, Avoid drug level fluctuations in the event of intra- and inter-patient variance, Very good patient adherence. The benefit of employing cream formulations is their practicality; they can be applied directly to the skin without leaving any traces behind, and they are simple to wash and clean. The aim of the present research work is formulation and evaluation of anti-ageing cream from the root extract of *Centella asiatica Linn.*

MATERIALS AND METHODS

Collection of plant: The whole plant of *Centella asiatica* was collected from local area of Hyderabad, Telangana, India.

Extraction: The plant root was cleaned and dried under standard shade conditions. Then it was grinded to obtain coarse powder of standard size suitable for extraction. The powder was subjected to extraction. After that the extract was air dried. The practical percentage yield will be calculated.

Preliminary phytochemical screening: The extract obtained was subjected to qualitative chemical test for the identification of various chemical constituents by following standard protocols [13-15].

Formulation of cream: Oil in water (O/W) based cream (semisolid formulation) was formulated. Heated liquid paraffin and beeswax in a borosilicate glass beaker at 75 ^{0}C and temperature was maintained (Oil phase). In another beaker, the preservatives and other water-soluble components were dissolved (borax, methyl paraben in distilled water and heated). This beaker is kept to 75 ^{0}C to dissolve borax and methylparaben and to get a clear solution (aqueous phase).

Evaluation of creams

Physical evaluation: In this test, the cream was observed for colour, odour, texture, state.

Washability:A small amount of cream was applied on the hand and it is then washed with tap water.

pH: 0.5g cream was taken and dispersed in 50ml distilled water and then PH was measured by using digital pH meter.

Viscosity: Viscosity of cream was done by using Brooke field viscometer at a temperature of 25°C using spindle No. 63 at 2.5rpm.

Phase separation: Prepared cream was kept in a closed container at a temperature of 25 - 100°C away from light. Then phase separation was checked for 24h for 30d. Any change in the phase.

Spreadability: The spread ability was expressed in terms of time in seconds taken by two slides to slip off from the cream, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides better the spread ability [16-20].

Figure 1: *Centella asiatica* plant

Table 1: Formulation of the anti-ageing cream

S. No.	Ingredients	F1	F2	F3	F4
1	*Centella asiatica*	0.5ml	1.0ml	1.5ml	2.0ml
2	Stearic acid	3.1g	3.1g	3.1g	3.1g
3	Cetyl alcohol	0.37g	0.37g	0.37g	0.37g
4	Almond oil	0.5ml	0.5ml	0.5ml	0.5ml
5	Polyethylene glycol	0.75ml	0.75ml	0.75ml	0.75ml
6	Glycerine	1ml	1ml	1ml	1ml
7	Triethanolamine	0.25ml	0.25ml	0.25ml	0.25ml
8	Tween 80	1.25ml	1.25ml	1.25ml	1.25ml
9	Sodium benzoate	0.12g	0.12g	0.12g	0.12g
10	EDTA	0.01g	0.01g	0.01g	0.01g
11	Rose water	1.5ml	1.5ml	1.5ml	1.5ml
12	Water	Q. S	Q. S	Q. S	Q. S

RESULTS AND DISCUSSION

Table 2: Organoleptic results of the extract

Properties	Chloroform extract
Colour	Greenish black
Odour	Characteristic
Consistency	Sticky
% Yield	2 g

Table 3: Preliminary phytochemical screening

S.No.	Chemical constituents	Chloroform extract
1	Alkaloids	+
2	Tannins	+
3	Glycosides	-
4	Phenolic compounds	-
5	Flavonoids	+
6	Saponins	+

(+) Present, (-) Absent

Physical evaluation:

In this test colour, odour, texture and state of 4 formulations were examined.

Table 4: Physical evaluation

Parameters	F1	F2	F3	F4
Colour	Cream	Cream	Cream	Cream
Odour	Pleasant	Pleasant	Pleasant	Pleasant
Texture	Smooth	Smooth	Smooth	Smooth
State	Cream	Cream	Cream	Cream

Table 5: Irritancy

Formulation	Irritant effect	Erythema	Edema
F1	Nil	Nil	Nil
F2	Nil	Nil	Nil
F3	Yes	Nil	Nil
F4	Nil	Nil	Nil

Table 6: Washability and pH

Formulation	Washability	pH
F1	Easily washable	7.0
F2	Easily washable	7.0
F3	Easily washable	6.99
F4	Easily washable	6.99

Table 7: Spreadability

Formulation	Time in sec	Spreadability(gxcm/sec)
F1	6	4.16
F2	7	3.57
F3	5	2.52
F4	10	3.56

Table 8: Phase separation and greasiness

Formulation	Phase separation	Greasiness
F1	No phase separation	Non-greasy
F2	No phase separation	Non-greasy
F3	No phase separation	Non-greasy
F4	No phase separation	Non-greasy

CONCLUSION

Since they contain secondary metabolites, plants have been useful to humans for a very long time. *Centella asiatica* is a widely used herb with a wide range of medical applications. In India, China, Sri Lanka, Nepal, and Madagascar, *Centella asiatica* L, sometimes known as Indian Pennywort, has been used as a medicine for thousands of years. The Apiaceae family includes the herbaceous creeping plant *Centella asiatica* (L.) It is referred to as Brabhnmi in Ayurveda, Madukparni in Unani medicine and Gotu Kola in Western medicine. Traditionally, *Centella asiatica* has been used to enhance Cognitive function and memory, improve wound healing, treat anxiety, insomnia, and stress, and support skin health. The herb is also believed to have anti-inflammatory and anti-oxidant properties, which may help to protect against cell damage and reduce the risk of certain diseases. In modern times, *Centella asiatica* has been studied extensively for its potential health benefits.The present study successfully formulated an anti-aging cream using root extracts of *Centella asiatica* Linn. Phytochemical analysis confirmed the presence of active compounds with therapeutic potential. The cream exhibited good physical

stability and was well tolerated on the skin.The formulation maintained desirable pH, spreadability, and homogeneity throughout the stability period.No signs of skin irritation or adverse reactions were observed during preliminary testing.Furthermore, a detailed and systematic approach can be done in exploiting and identifying the phytopharmacology to explore in knowing the maximum potentiality of the plant which will be useful to mankind.

Conflicts of interest: None declared.

Sponsorship: Nil.

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