

Formulation and Evaluation of Cyperus Rotundus Tuber Herbal Cream

S.A.Vadivel*¹, G.Sivasankari², A.Karthigayani², N.Neeraj kumar², G.Bharathi²,
G.Nitishkumar³, Dr.P.Dinesh kumar¹.

¹Research Scholar, Department Of Pharmaceutics,

²Smt Gandhimathi College Of Pharmacy, Tiruvannamalai, Tamil Nadu. India.

³R.R.College of pharmacy,bangalur,karanataka, india.

*Corresponding Author: S.A.Vadivel

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ABSTRACT:

The main aim of our present work is formulate and evaluate the herbal face cream containing extract of cyperus rotundus tubers. The phytoconstituent also analysed in the extract of cyperus rotundus tuber. The different types of formulation oil in water herbal cream namely F1,F2,F3,F4,F5 was formulated from the ethanol extract of cyperus rotundus tuber. All the five formulation (F1,F2,F3,F4,F5) was evaluated for various parameters like viscosity, irritability, pH, spreadability, homogeneity, easy of removal, redness test, appearance test, rheological study. The formulation are showed good spreadability, good consistency, homogeneity, good appearance, easy to removable and irritation during irritancy studies but no irritation produced. This cyperus rotundus tuber cream formulation are safe to use for skin.

Key words: cyperus rotundus tubers., ethanol, herbal cream

I. INTRODUCTION:

The cosmetics products are created for application on the body cleansing purpose, beautifying or altering appearance and enhancing the beauty. The cosmetics are developed to reduce the wrinkles, fight against acne & control the oil secretion. Various types of skin products like sunscreen, skin protective, antiacne, antiwrinkle are designed by using varieties of materials either natural or synthetic. The demands of cosmetics is rapidly expanding and this expansion is due to availability of ingredients. Then the financial rewards for the developing successful products, consumers demand and better understanding of skin physiology. The herbal products claim to have less side effect. Commonly

seen the product containing synthetic agent and the market research shows upward trend in the herbal trade, the herbal cosmetic industry playing major role in fuelling this world wide demand for herbals. The cyperus rotundus is a perennial plant, it's family cyperaceae. The cyperus rotundus otherwise called muthakach in tamil (korai kizhangu in some villages) It may reach high up to 140cm (55 in). It is also called nut grass and nut sedge, are derived from its tubers. The leaves sprout in ranks of three from the base of the plant around 5 to 20cm (2-8in) long. Its flower stems have a triangular cross section. Cyperus rotundus flower is bisexual, three stamens & three stigma pistil with the inflorescence having 3 to 8 unequal spikes. Its fruit is three angled achene. The young plants of cyperus rotundus initially form white and fleshy rhizomes upto 25 mm (1.0 in) in dimension in chains. Some rhizomes grow upward in the soil, then form a bulb like structure from which new shoots & roots grow, other rhizomes grow horizontally or downward and form dark reddish brown tubers or chains of tubers. It was found in all countries like India, Assam, Afghanistan, Japan, Pakistan, Philippines, Sri Lanka, Western Australia, etc. The anti-bacterial activities of crude extract of cyperus rotundus have efficiency against some clinical isolate of bacteria. The World Health Organization plants belonging to clinical aspect, considered as the worthiest choice in the drug production. The cyperus rotundus was locally used in traditional medicine decoction for flatulence, vomiting, nausea, regulating hormones, diuretics, tonic hypoglycemic. The cyperus rotundus having antifungal, antibacterial, antiseptic, antioxidant, antibiotic properties. The main objective of present work was to be prepared and evaluated of the herbal face cream cyperus rotundus tubers.

II. MATERIAL AND METHODES:

Plant metrial:



The entire herb of cyperus Rotundus Rhizomes (tuber) was collected from sangiyam, keezhapalayam and E.N. palayam village That village 30km away from kallakurichi, and pennagar village, this village 80km away from thiruvannamali.

Chemicals:

All the chemicals and reagents used for our entire experiment work are procured from our college labe (Smt gandhimathi college of pharmacy).

Preparation of extract:

The healthy cyperus rotundus rhizomes (tuber) was collected. Then it is washed with fresh water to remove soily & adhered matters. Then it was dried under the shade at room temperature and fumigated. They was powderd by using pulveriser and sieved with 40 mesh size. About 3kg of powdered drug is weighed & subjected to successive soxhlete extraction with ethanol(60-70°C) for period of 48 hours.



Finally obtained extract is filtered through a muslin cloth. Then it was dried in the vaccum

condition to get a semisolid mass whose yield was characted in table-A. The dried extract were

subjected to various chemical tests to detect the phytochemical constituents.

Cream Formulation:

Oil in water (O/W) based cream (semisolid formulation) was formulated. The stearic acid used in emulsifier agent and other oil soluble components like cetyl alcohol, coconut oil was dissolved in the oil phase (Part-A) then heated 75°C. The preservatives & other water soluble components like methyl paraben, propyl paraben, triethanolamine, propylene glycol and ethanol extract of cyperus rotundus tubers was dissolved in the aqueous phase (Part-B) then it was heated 75°C. After heating, the (Part-B) aqueous phase was added into the (Part-A) oil phase with continuous stirring until cooling of emulsifier to place. The formula of the cream is given table-A.

Evaluation of cream:

pH of the cream:

The cream pH was determined by using standard buffer solution. 1gm of cream is dissolved in 100ml of distilled water and its pH was measured.

Viscosity:

The viscosity of the formulation of cream was determined by Brookfield viscometer at 100rpm by using spindle no.7.

Dye test:

The cream was evaluated in dye test. The scarlet red dye is mixed with formulation then a drop of the mixed cream on a microscopic slide covers with cover slip. And examine it under microscope. The dispersed globules appear red the ground is colourless. The formulation of cyperus rotundus cream is oil in water type. In case the cream dispersed globules appear colourless in the red ground means the formulated cream is water in oil.

Homogeneity:

The cyperus rotundus cream is tested for the homogeneity by visual appearance & by touch.

Appearance:

The appearance of the herbal cream was reported by its color, roughness, pearlance and graded.

Types of smear:

After the application of this formulated cream, were checked in the type of film or smear formed at the skin.

Removal test:

After the cream was applied for the particular part of skin then the removal of cream was tested by washing the tap water.

Irritancy test:

The cream is applied to the specified area and the time was noted. Irritancy, edema, erythema was checked. If any regular intervals up to 24 hours and reported.

Rheological studies:

The herbal cream is found to be non to be non-newtonian. Take the fixed quantity of 10 gm of cream in a 10 ml beaker and keep it 1hour. The beaker inclined to one side see the whether the cream is liquefied or not, then the beaker is shaken for continuous 5minutes and checked whether consistency has changed or not. Then the finally beaker was again tilted and checked for pourability of the cream.

Accelerated stability testing:

Accelerated stability testing of prepared cream were conducted for 2 most stable formulations at room temperature studied for 7 days. The was formulation number 4, 5 at 40°C ± 1°C for 20 days. The formulation is kept both at room & elevated temperature and observed on 0, 5th, 10th, 15th and 20th day for the following parameters.

Acid value:

Take 10 gm of prepared cream dissolved in accurately weighed in 50ml mixture of equal volume of alcohol & ether. The flask is connected to reflux condenser & slowly heated, until sample was dissolved completely to this 1ml of phenolphthalein added and titrated with 0.1N NaOH until faintly pink color appears after shaking for 30 seconds.

Acid value = $\frac{n \times 5.61}{w}$

n=The number of ml of NaOH required

w=The weight of substance.

Saponification value;

About 1gm of substance refluxed with 25ml of 0.5N alcoholic KOH for 30 mints and 1ml of phenolphthalein added & titrated immediately with 0.5N HCL

Saponification value = (b-a)*28.05/w.

The volume in ml of titrant =a

The volume in ml of titrate =b

The weigh of substance in gm =w

III. RESULT:

Table A: Phytochemical screening of cyperus rotundus tubers

S.NO.	Chemical constituent	Hexane extract	Ethanol extract	Aqueous extract
01	Alkaloids	-	+++	+
02	Glycosids	+	+	Not clear
03	Flavanoids	-	+++	+
04	Anthroquinone	-	+	-
05	Phenols	-	+++	+
06	Phlobatannins	-	+	+++
07	Saponins	-	+++	+++
08	Steroids	-	+	+
09	Tannins	-	+++	+
10	Terpenoids	+	+++	Not clear

+ positive, +++ strongly positive,- negative

Table 1: Composition of Cream

Ingredients	Formula % w/w				
	F1	F2	F3	F4	F5
Ethanolic extract of cyperus rotundus	2	1.5	1	2	3
Stearic acid	0.5	2	1.4	1.4	
White beeswax	7	6.5	6	5.5	7
Triethanolamine	-	0.5	1	1.5	
Almond oil	1.5	1.8	2.0	2.2	2
Propylene glycol	6	6	6	6	
Metyl paraban	4	4.1	4.3	4.6	4
Propyl paraban	0.02	0.02	0.02	0.02	0.02
Cetyl alcohol	0.04	0.04	0.04	0.04	
Water	QS	QS	QS	QS	QS

Table 2: Type of Adverse effect of formulations

Formulation	Irritant	Erythema	Edema
F1	Nil	Nil	Nil
F2	Nil	Nil	Nil
F3	Nil	Nil	Nil
F4	Nil	Nil	Nil
F5	Nil	Nil	Nil

Table 3: Test applied for acid value and saponification value

S.No	Parameters	Formula				
		F1	F2	F3	F4	F5
1	Acid Values	5.8	5.9	6.3	5.8	6.2
2	Saponification Value	2.3	26.3	27.3	26.3	26.4

pH of the cream:

The pH of the prepared cream was found to be 6-7 range, this is good for skin pH. The all formulated cream pH are shown table-4

Viscosity:

The viscosity of the cream was 27126-27145 cps range so, the cream is easily spreadable. And the F4,F5 having good spreadability property in compare other formulation.

Dye test:

The dye test are conformed that all formulation are oil in water type (emulsion) cream.

Homogeneity:

The all formulation of this cream is produce uniform distribution. It is conformed by visual appearance & touch.

Appearance:

The formulation was kept for long period, the cream was no colour change.

Rheological test:

The cream had pseudo plastic behavior, all the formulation shows no thixotropic (shear thinning) characteristics.

Type of smear:

The cream was applied after the type of smear formed in the skin was non greasy.

Removal:

The prepared cream was applied to the skin. It is easily removed by washing with tap water.

Irritant test:

The cream shows no redness, edema, irritation and inflammation during the irritation test. So the formulation are safe to use skin (table-2).

Acid value and saponification value:

Acid value and saponification value of prepared cream result was shown in table-3, it is satisfactory values.

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