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Formulation And Evaluation Of Multipurpose Herbal Cream Containing Hibiscus Rosa-Sinensis

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ABSTRACT

Herbal cosmetics are the preparation used to enhance the human appearance. The aim of the present research was to formulate the herbal cream for the purpose of moistening,nourishing ,lighting,protecting and treatment of various diseases of the skin. Different crude drug hibiscus rosa sinesis (jaswand flower),aloe barbadensis(aloe vera leaves), ocimum sanctum(tulsi leaves), azadiracta indica (neem leaves), curcuma longan(turmeric rhizomes), santum album(sandal wood), curcuma amada(amba halad), cedro oil (lemon peel), carica papaya (papaya), olium rosae (rose oil), orange oil, prunus dulcis(almond oil) were taken. accelerated stability testing oftwo final samplehas been conducted in the environmental chamber with temperature 25± 10^0c and humidity 60± 10%RH.Formulation F3 and F2 were found to be stable with no sign of phase separation and no change in the color. Thepatch testfor sensitivity testing has also been done and no evidence ofskin irritation and allergic sign. This work mainly focuses on the assessment of the microbial quality of formulated cosmetic preparation. Both formulation were found to comply with the microbial limit test as per the international specifications. Thus herbal cosmetics formulation is safe to use was proved and it can as the provision of a barrier to protect skin.

Keywords: herbal cream, protecting, cosmaceutical, microbial stability.

Introduction

The cosmetics are the utility product used extensively thought the world for the maintaining and improving general appereance of face and other part of body e.g. skin, eye, hair, hand , etc. herbal cosmetics are the preparation which represent cosmetics associated with active bio-ingredient, neutraceutical and pharmaceuticals. Cosmetics product that are used to cleanse and beautify the skin. The first recorded use of cosmetics is attributed to Egyptians in 4000 B.C. pharmaceutical are the essentially drug products and are defined as products that prevent, migrates, treat or cure diseases and affect the structures or function of the body.

Herbal cosmetics

Herbal cosmetics also known as natural cosmetics. With the beginning of the cultivation, mankind had the magnetic dip towards impressing others with their looks. At the time, there were no fancy fairness creams or any cosmetics surgeries. The only thing they had was the knowledge of nature, compiled in the ayurveda. Ayurvedic cosmetics also known as the herbal cosmetics have the same estimable assest in the modern era as well. There is a wide gamut of the herbal cosmetics that are manufactured and commonly used for daily purposes. Herbal cosmetics like herbal face wash , herbal conditioner, herbal soaps, herbal shampoo, and many more are highly acclaimed by the masses.

1) Herbal cosmetics are maintained in effective manner with following benefits.

2) Being natural,least harmful effect on the skin or other body part.

3) Relatively more safe.

4) More placebo effect to the consumers due to its use in tradition and culture.

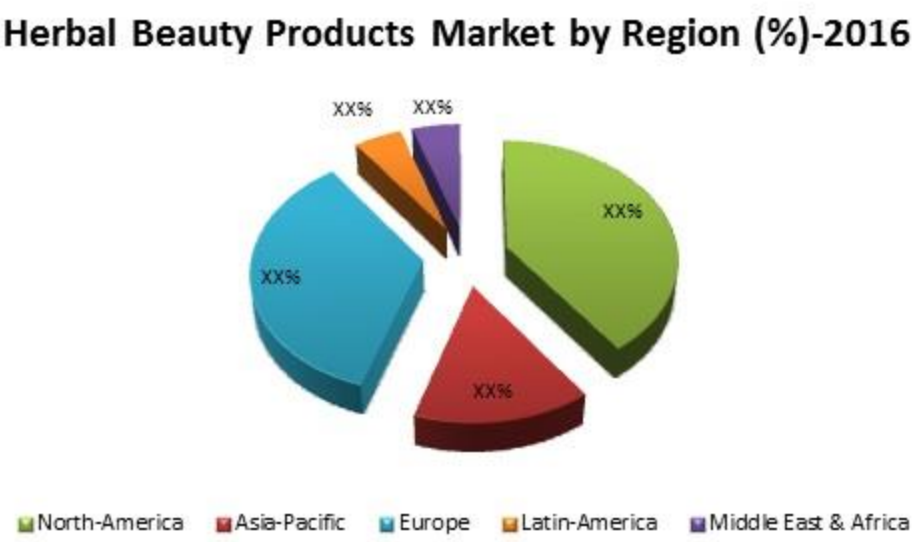
5) Flexibility in formulation.

6) Population proves effect from ancient time.

7) Easy availibilty.

Present status

The market is expected to reach USD 120billion by 2024expanding at a robust CAGR over the forecast period i.e. 2017-2024.the rising healthcare awareness among the customers is likely to expand the market. Increasing global exposure to the health and beauty trends is resulting in the increased demand for the herbal products. Further , the healthcare products are considered as the low cost and effective replacement to the synthetic beauty products due to their herbal extracts that positively impact the hormone function.



Source: Research Nester

Consumer trends

Changes the gender divide the market share of men's cosmeceutical products is starting to be significant but they have long way to go before they rival those for women. A report published by the natural marketing institute NMI in 2017showed that fastest growing segment today is the men's cosmeceutical range. The demand for looking good and maintaining youthful healthy skin no longer just for women. The first major wave of men's skin care product appeared in the mind 1990 and has since grown steadily to a projected 6 billions in sales for 2008.

Herbal extracts use in cosmetics

Herbal extracts are primarily added to the cosmetics preparations due to several associated properties such as antioxidants properties. These antioxidants botanicals are generally classified into three categories depending upon the nature of their constituents as carotenoids, flavonoids, and polyphenols. The carotenoids are structurally related to vitamin A and constitue various retinols like retinoic acid. Flavonoids, in addition to the antioxidants action, impart the UV protection and metal chelating properties. The polyphenols is a large class and contains various molecules like rosemarenic acid , hyperrcin.

Aim and objective

Aim:

The main of the present research was to formulate and evaluate multipurpose herbal cream containing hibiscus rosa sinesis for the purposeof moistening, nourishing, lightining, protecting and treatment of various diseases of the skin.

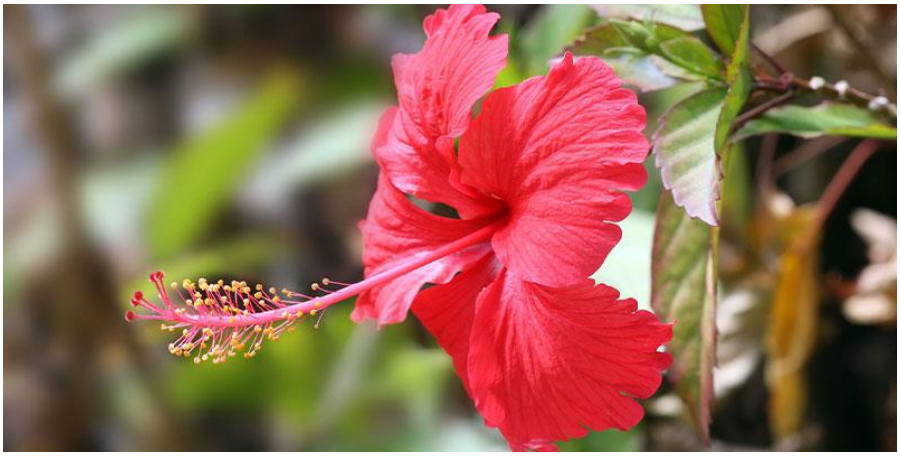
Objectives of study:

The purpose of the presents study is

1. Collection of the different plants and authentication.
2. Extraction of the required active constituents from the selected plants.
3. Formulation of the poly herbal cram using the extracts.
4. To carry out physicochemical parameters:
   - Organoleptic evaluation
   - Homogenecity
   - After feel
   - Wash ability
   - Consistency
   - pH of the cream
   - viscosity
   - spreadability
   - test for microbial growth in formulated creams
   - stability studies.
5. To carry out skin irritation studies.

Drug profile

1. **Hibiscus flower:**
   Common name : china rose, jaswand, shoe flower.
   Biological source:
   Hibiscus rosa-sinensis, known colloquially as **Chinese hibiscus**, **China rose**, **Hawaiian hibiscus**, **rose mallow** and **shoeblack plant**, is a species of tropical hibiscus, a flowering plant in the Hibisceae tribe of the family Malvaceae. It is widely cultivated as an ornamental plant in the tropics and subtropics, but its native to east asia.



Chemical constituents:

Hibiscus rosa- sinensis contained tannins, anthraquinones, quinines, phenols, flavanoids, alkaloids, terpenoids, saponins, cardiac glycosides, protein, free amino acids, carbohydrates, reducing sugars, mucilage, essential oil and steroids.

Categories:

Cytotoxic, antmicrobial, antiparasitic agents, dermatological, antioxidants, analgesic, antipyretic, anti-inflammatory and protective.

2. Turmeric:

Common name: Turmeric, haldi, halad,

Biological source: Turmeric consists of the dried rhizomes of curcuma longa L. belonging to family zinziberaceace.

Chemical constituents: curcuminoids, nonvolatile coloring matter, curcumin, diferulomethane, desmethoxy dicinnarmoyl methane, bidesmethoxy curcumin, volatile oil, cycloisopren myrcene, zinziberebe, turmerone, cineol, borneol etc.

Categories: Antimicrobial, antiseptic, antibacterial, antioxidants and anti-inflammatory agent.

3) Neem :

Common name: nira, nimb, veppa,, limba, nimbi

Biological source: Neem consists of the **fresh or dried leaves and seed oil of Azadirachta indica J. Juss (Melia Indica or M. azadirachta Linn.)**.belonging to family meliaceae.

Chemical constituents: The most important active constituent is **azadirachtin and the others are nimbolinin, nimbin, nimbidin, nimbidol, sodium nimbinate, gedunin, salannin, and quercetin**.

Categories: antimicrobial, antiviral, antifungal and spermicidal.

4) Tulsi:

Common name: sacred basil, holy basil

Biological source: Tulsi consists of the **fresh and dried leaves of Ocimum species like Ocimum sanctum L. and Ocimum basilicum L. etc.** belonging to family labiatae.

Chemical constituents: Fresh leaves and stem of Ocimum sanctum extract yielded some phenolic compounds (antioxidants) such as cirsilineol, circimaritin, isothymusin, apigenin and rosameric acid, and appreciable quantities of eugeno. The leaves of Ocimum sanctum contain 0.7% volatile oil comprising about 71% eugenol and 20% methyl eugenol. The oil

also contains carvacrol and sesquiterpine hydrocarbon caryophyllene . Two flavonoids orientin and andvicenin from aqueous leaf extract of Ocimum sanctum have been isolated.

Categories: antibacterial, insecticidal and antioxidents.

5) papaya:

Common name: papaya,mammon**.**

Biological source: papaya, (Carica papaya), also called papaw or pawpaw, succulent fruit of a large plant of the family Caricaceae.

Chemical constituents: phytochemical investigation of the hydromethanolic extract of Carica papaya Linn. leaves (Caricaceae) resulted in the isolation and characterization of ten compounds, namely; carpaine , methyl gallate, loliolide , rutin , clitorin , kaempferol-3-O-neohesperidoside , isoquercetin , nicotiflorin and isorhamnetin-3-O-β-D-glucopyranoside .

6) Aloe :

Common name : aloe, aliyo

Biological source: The botanical name of Aloe vera is **Aloe barbadensis miller**. It belongs to Asphodelaceae (Liliaceae) family.

Chemical constituents: phenolics compounds including chromones , anthraquinones , and pyrones are the major secondary metabolites of A. barbadensis.

7) Almond oil:

Common name: almond milk, almondoil,amygladin.

Biological source: Almond oil is a fixed oil obtained by **expression from the seeds of Prunus amygdalus (Rosaceae) var. dulcis (sweet almonds) or P. amygdalus var. amara (bitter almonds)**.

Chemical constituents: Both varieties of almond contain 40–55% of fixed oil, about 20% of proteins, mucilage and emulsin. The bitter almonds contain in addition 2.5–4.0% of the colourless, crystalline, cyanogenelic glycoside amygdalin.

8) Amba haldi

Common name: ambe haldi, amba haldi, mango ginger etc.

Biological name: curcuma ambda, the mango ginger is a plant of the ginger family zingibereaceae and is closely related to turmeric.

Chemical constituents: it contains curcumin ,potassium, alkaloids,ascorbic acid, beta carotene, magnesium, copper, fructose, iron, phosphorus, protein, sucrose, vitamin A , vitamin B, B1, vitamin c, vitamin E, vitamin K, … etc.

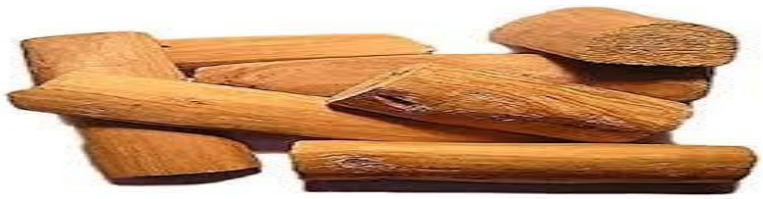
Categories: anti-inflammatory, antioxidant, antiseptic, vulnery, analgesic, antibacterial, antiviral, detoxication etc.

9) sandal wood

Common name: chandan, yellow sandal wood

Biological source: it is dried heart wood of plant santhum album family- santalaceae.

Chemical constituents: sandal wood contains mixtureof two isomers α and β santolol , α and β santaleene,santalone, santanone, etc.



Experimental

Material used:

All the chemicals and reagents used were of analytical grade proved by collage purchase from himedia includes stearic acid, potassium hydroxide, sodium carbonate, glycerine, cetyl alcohol, methyl paraben, propyl paraben, triethanolamaine, propyleneglycol, bees wax, liquid paraffine ,borax, rose oil, almond oil and lemon peel.

Methodology:

Preparation of extract

Two methods are used for preparation of extract.

1) Aqueous extracts(turmeric, lemon peel, neem)
   5gm of each ingredient weighted accurately and dissolve each in 50 ml of water. This solution is placed on water bath at 80-100 c. the heating solution was concentratedup to 20ml.then follow filtration process of each ingredients and collect the each filter product.
2) Alcoholic extract(papaya)
   5gm of each ingredient weighted accurately and dissolve each in 50 ml of water. This solution is placed on water bath at 80-100 c. the heating solution was concentratedup to 20ml.then follow filtration process of each ingredients and collect the each filter product.

Sr.no.	constituent	percent
1	Hibiscus flower extracts	0.80
2	Turmeric extracts	0.45
3	Papaya extracts	0.28
4	Tulsi extracts	0.25
5	Neem extracts	0.35
6	Aloe extracts	0.40
7	Amba haldi extracts	0.35
8	Rose extracts	0.25

9	Orange peel extracts	0.10
10	Sandal wood	0.20

Formulation preparation:

Sr.no.	Ingredients	F1	F2	F3
1	Extract	5ml	5ml	5ml
2	Stearic acid	17 g	12g	-
3	Cetyl alcohol	-	2.5g	-
4	Potassium hydroxide	0.5g	-	-
5	Sodium carbonate	0.5g	-	-
6	Glycerine	6 ml	-	-
7	Methyl paraben	-	0.18g	1g
8	Propyl paraben	-	0.12g	-
9	Propylene glycol	-	10ml	-
10	Triethanol amine	-	1.35ml	-
11	EDTA	-	0.1ml	-
12	Bees wax	-	-	10g
13	Liquid paraffine	-	-	12g
14	Almond oil	-	-	30ml
15	Borax	-	-	1g
16	Water	q.s.	q.s.	q.s.

EVALUATION OF CREAM:

1) **Physical properties:** the cream was observed for color, odor and appereance.
2) **Test for thermal stability:** thermal stability of the formulationwas determined by the humidity chamber controlled at 60-70%RH and 37±1^{0}c.
3) **Determination of ph:** 5±0.01 g of the cream was weighted accurately in a 100ml beaker.45 ml of water was added and dispersed the cream in it. the ph of the suspension was determined at 27^{0}c using the ph meter.
4) **Stability studies:** the stabilitystudieswre carried out as per ICH guidelines. The cream filled in the bottle and kept in humidity chamber mainatained at 30±2^{0}c /65±5%RH and 40±2^{0}c/75±5% RH for two months.
5) **Patch test:** about 1-3gm of material to be tested was placed on a piece of fabric or funnel and applied to the sensitive part of the skin e.g. skin behind ears. The cosmetics to be tested was apllied to an area of 1 sq.m. of the skin. Control patches were also applied. The site of patch inspectedafter24hr.
6) **Spreadability test**

7) **Test for microbial growth**
8) **Washability**
9) **Phase sepearation**
10) **Moisture absorption studies**

Results and discussion

1) **Physical properties**

The physical properties and all formulated cream were judged by its color, odour and other texture.

parametrs	**F1**	**F2**	**F3**
color	Lemmon yellow	Lemmon yellow	Lemmon yellow
Odour	characteristics	characteristics	Characteristics
texture	smooth	smooth	smooth

2) **Test for thermal stability:**

Thermal stability of the formulation was determined by the humidity chamber controlled at 60-70 c.RH and 37± 10 c. finally all the formulationsstable and nooil separation were observed.

test	**F1**	**F2**	**F3**
Thermal stability	Stable, no oil separation	Stable, no oil separation	Stable, no oil separation

3) **Test for microbial growth in formulated cream**

The formulated creams were inoculated on the plates media by streak plate methodand a control was prepared by omitting the cream. The plates were placed in the incubator and are incubated at 37 c for 24 hr. after the incubation period,plates were taken out and check the microbial growth of gram positive and gram negative by comparing it with control.

Sr.no	**Formulation**	**Bascilus**	**Ecoli**
1	**F1**	Absent	Absent
2	**F2**	Absent	Absent
3	**F3**	Absent	Absent

4) **Spreadability:**

Spreadability of cream formulations that is the ability of a formulated cream to evently spread on the skin plays an important role while compairing with the administration of a standard dose of a medicated formulation to the skin and the efficacy of a topical therapy. The spreading values, that is diameters obesreved for

the formulation after one minute. Results indicated that our cream had comparable spreadability to that of commercial products which was used as comparatorin the study.

Formulation	TIME	spreadability
F1	15	8.3
F2	14	8.9
F3	16	8.7

5) **Irritancy:**

All formulation shows no irritation, erythema and edema during irritancy test study. The resulted of irritancy test formulation were safe to use for skin.

formulation	irritant	erythrema	edema
F1	NIL	NIL	NIL
F2	NIL	NIL	NIL
F3	NIL	NIL	NIL

6) **Washability test:**All small amount of cream apllied on hand and washed under running tap water**.**

formulation	washability
F1	Easy washable
F2	Easy washable
F3	Easy washable

7) **Viscosity:**

Viscosity of formulated cream was determined by brook field viscometer at 20 rpm using spindle no. LV 4 . the viscosity of cream was foundin range of 49990 to 30000 cp. Which indicates that cream was spreadable by small amount of shear**.**

parameter	F1	F2	F3
viscosity	**49010**	**48980**	**49210**

8) **Ph of the cream:**

The result of ph prepared creams was found to be around 6 whichare suitable for topical application. Because skin ph in between 4.5-6.

formulation	ph
F1	**7.28**
F2	**6.85**
F3	**6.65**

9) Phase separation

The formulated cream was kept intact in a closed container at 25-100 c not exposed to light. Phase separation was observed carefullyevery 24 hr. for 30 days.

formulation	Phase separation
F1	**No phase separation**
F2	**No phase separation**
F3	**No phase separation**

10) Moisture absorption studies

About 50 gm of cream was taken on watch glass a beaker was taken with full of water and was kept in a desicator without absorbents and allowed to get saturated. Watch glass with cream was introduced into

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the desicator. It was left 24 hrs. after 24hrs the moisture absorption was noted and results are shown in table.

formulation	Moisture absorption
F1	Moisture not absorption
F2	Moisture not absorption
F3	Moisture not absorption

Summary and conclusion:

The present study involves formulation, development and evaluation of multipurpose herbal cream containing hibiscus rosa sinesis. The present work mainly focuses on the potential of extracts from cosmetic purposes the uses of cosmetics have been increased in many folds in personal care system. The prepared body cream o/w type emulsion, hence can be easily washed with plane water which gives better customer complience. Our study indicated that formulation were more stable. These formulation had almost a constant ph, emollient properties, they were not greasy and easily removable after the application. the stable formulation were safe and skin irritation and allergic sensitizations were scare. All the formulation passed the microbial test which included some parameters like total bacterial count and fungal count, pathogens like E.Coli, bacillus were also absent.