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Research Article

Formulation And Development of Under Eye Cream

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ABSTRACT

Under Eye Creams are Formulated Specifically for The Delicate Skin Around the Eyes so they to be thicker and contain more Emollient and conditioning agent than facial lotion. When there is more melanin produced around the eye than is usual giving them a Darker color the condition is Periorbital Hyperpigmentation. The Breakthrough Herbal Actives reduce the appearance of dark circles and protect the sensitive area under the eye from sunlight herbs and spices have been used in maintaining and enhancing humans beauty since the ancient times. Indians use natural Herbs and species such as rice water potato, turmeric, cucumber etc. Syzygium Cumini known as jamun can also used in cosmetic for treatment Jamun Contain Flavonoids which gives antioxidants Property. The Cream Was Prepared by using the cream base that by stearic acid. Cetyl alcohol ,lanolin, Almonds oil, methyl Paraben, Propyl Paraben ,triethanolamine. Jamun Contain Flavonoids which gives Property the formulated under eye cream was applied the results obtained after Eight week were Satisfactory.

INTRODUCTION

Cream is defined as semisolid emulsions which are oil in water (o/w) or water in oil (w/o) type and these semisolid emulsions are intended for external application . Cream is classified as oil in water and water in oil emulsion. It is applied on outer part or superficial part of the skin and its main ability is to remain for a longer period of time at the site of application. The function of a skin cream is to protect the skin against different environmental condition, weather and gives soothing effect to the skin. There are different types of creams like cleansing, cold, foundation, vanishing, night, massage, hand and body creams. The main aim of our work is to develop a herbal cream which can give multipurpose effect, like moisturizer, reduce acne and skin irritation, reduce skin diseases like eczema, psoriasis, dry skin, wrinkles, rashes etc. And also adding glow to the face. We have used three herbal ingredients in our preparation which are Aloe Vera gel, Neem, Tulsi. Aloe Vera gel is used as a moisturizer, to reduce

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pimples and acne and also used for treatment of burn wounds. Neem is used as an antifungal and anti-inflammatory and it is also used to reduce scar, pigmentation, redness and itching of the skin Tulsi is used to add glow to the skin and to promote wound healing. (1) Under eye creams are formulated specifically for the delicate skin around the eye, so they tend to be thicker and contain more emollients and conditioning agents than facial lotions. Eye creams are moisturizers that are specially formulated for use on the delicate skin around your eyes. Face moisturizers and eye creams are not always interchangeable. Always read the product label and carefully choose formulas that are suitable for use around the eyes. Eye Cream are wonderful in the morning to smooth, refresh, and help diminish AM puffiness. The light, silky texture of most eye Cream also works well under makeup. The rich eye creams can cause concealer to crease into lines and shorten the wear time of eyeliner and mascara, problems that eye Cream typically don't cause.To look stunning and beautiful is a natural Aspiration. This increased awareness of looking Good has also brought in more sensitivity to Problems of the skin especially the face. Eyes are Known as "The Windows of our Soul".One of the Major problems faced by people of all age groups is That of dark circles. The skin under the eye is very Thin and when blood passes through the large veins Close to the surface of the skin, it can create a Bluish tint to the skin. The more transparent the Skin is, the darker the circles appear. When there is Moremelanin produced around the eyes than is Usual, giving them a darker color, the condition is Periorbital hyperpigmentation. The causes for dark Circles include fatigue, stress, excessive sun Exposure, sleep deprivation, long working hours, Lack of balanced diet, dehydration and medical Conditions related to kidney, thyroid, and anemia. Eye care products are one of the top selling Cosmetics in the world. A large number of under Eye creams are currently available in the market. However many common side effects reported for these currently available under eye creams are as Follows: redness, burning, itching, peeling and Swelling. Several studies on cosmetic reactions Have shown that the ingredients most often Responsible for cosmetic allergy are fragrances. Therefor most of the agents used to treat skin Hyperpigmentation or discoloration show common Adverse effects like mild irritation, increased risk of Sun damage/ sensitivity and minor skin cracking as Most of them contain artificial colour or perfume.(2)

All causes of dark circles under the eyes includes (3)

- Vitamin deficiencies, including vitamin B12, E, K and D, have been associated with dark circle
- Disinclinations, including hay fever
- Hyperactive saturation, which happens when the body produces further melanin
- Reduced situations of adipose towel around the eyes
- Thinning skin under the eyes
- Anemia from iron insufficiency
- Overexposure to sun
- Frequent rubbing of the eyes
- Aging
- Inherited genes
- Thyroid conditions
- Dehumidification

Advantages Of Using Eye Cream (4)

Eye creams, like face moisturizers, include skin-restoring and renewing chemicals that help hydrate, decrease the appearance of puffiness and dark circles, and protect against UV rays and other environmental aggressors. In addition, many include anti-aging chemicals that help reduce

crow's feet, fine lines, and wrinkles.Because most products are made up of a mix of substances, choosing an eye cream depending on your particular skin problem is recommended. So first, search for eye creams that an ophthalmologist has evaluated.

1. Reduce Dark Circles

A variety of factors may produce dark circles, but if yours are caused by thinner skin beneath the eyes, an eye cream can increase the skin's depth.

2. Make Fine Lines and Wrinkles Appear Less Visible

Laughter and smiles are suitable for the spirit, but they irritate the skin around the eyes. As a result, tiny wrinkles around the eyes are often the first indication of aging. Through hydration, eye cream helps to reduce their look. Unfortunately, there is no magic treatment that can remove fine lines – and we don't think they should be removed since they add character and are a natural part of aging. However, enough hydration will result in a more youthful and radiant look.

3. Protect Yourself from The Elements

Your skin serves as a barrier between you and numerous external factors, such as pollution and cosmetics—eye cream aids in the ability of your skin to perform its functions.

4. Skin Hydration

The skin around the eyes is often drieder than the rest of the face. As a result, even if you have an oily chin and Forehead, your eye skin may need more focused hydration.

Classification of dark circles (23)

Dark circle is defined as a homogenous, round, darkening of The Skin around or under both the eyes. Based on the clinical Pattern of pigmentation and vasculature analysis dark circlesAre classified as the following,

1.Pigmented (brown color)

2. Vascular blue/pink/purple color)

3. Structural (skin color)

4. Mixed

5. Pigmented vascular (PV) Pigmented Structural (PS)

6.Combination of Pigmented – vascular – Structural (PVS)

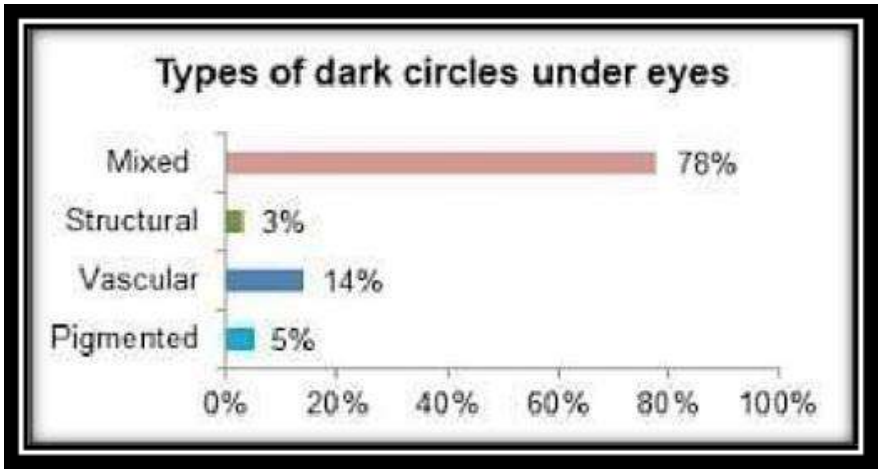


Figure no .1

Sr. No.	Type	Appearance
1.	Pigmented Type (P)	Appears as infraorbital, brown hue.
2.	Vascular Type (V)	Appears as infraorbital, blue, pink, purple hue with
		or without Periorbital Puffiness.

Some herbal drugs reported for under eye cream (2,3,15)

Sr. No	Plant Name	Part Use	References
1	Glycyrrhizaglabra	Rhizome Sandroot	Sreelesh Brinda et .al,2015
2	Hemidesmusindicus	Root	Sreeleshbrinda et .al,2015
3	Santalum Album	Heart Wood Central Part of tree	Sreelesh Brinda et .al,2015
4	Haritaki– Terminalia Chebula	Fruit	VaishnaviS,Patil et al, 2022
5	Potato – SolanumtubeRosum	Fruit	Vaishnavis,patil et al, 2022
6	Amla - Phyllanthusemblia	Fruit	VaishnaviS,Patil et al, 2022
7	Almond Oil - Prunusdulcis	Seed	VaishnaviS,Patil et al, 2022
8	Aloevera -AloebarbadensisMillller	Leaves	VaishnaviS,Patil et al, 2022
9	Syzygiumcumini	Leaves	MayuriA.Parateet al ,2022

Marketed Formulation Under Eye Cream

1. Herbal Under Eye Cream
2. Re equil Under Eye Cream
3. Eyelift Natural Under Eye Cream
4. Himalaya Herbal Under Eye Cream
5. Vasu Under Eye Cream
6. HK VITALS By Healthkart
7. O3+ Under Eye Cream
8. Coffee Under Eye Cream
9. New Eyebliss Under Cream
10. Seoma Under Eye Cream
11. Aroma Under Eye Cream
12. Moody Vitamin C Under Eye Cream

Fig No. 2 Marketed Formulation Under Eye Cream

Dark Circles (23)

Dark circles are a relatively prevalent condition that affects People of all ages under or around the eyes. It's also known as a Darkening of the skin around or under both eyes that is uniform And circular. Dark circles can be caused by excessive Pigmentation, shadows from bags under the eyes, infraorbital Fat prolapse, shadows from infraorbital sagging and wrinkles, And thin, translucent skin over the orbicularis oculi muscle.

Pathomechanisms of Dark Circles

Dark circles can be caused by a variety of exogenous and Endogenous variables, including sex, ageing, anatomical Variations, atopic dermatitis, dryness, heredity, and otherPhysical disorders. Excessive pigmentation, tear troughs ,Shadowing due to infraorbital laxity and wrinkles, thin Translucent skin atop the orbicularis oculi muscle, shadowing Due to infra-orbital fat herniation, and vein running are some of The clinical variables that create dark circles.

Excessive Pigmentation

Atopic dermatitis and allergic contact dermatitis sufferers are More likely to have dark circles. Periorbital dermatitis and itchy rubbing habit can cause post-inflammatory hyper Pigmentation (PIH) around the eyes in these individuals.

Infraorbital Fat Herniation

The infraorbital fat protrusion does not directly cause dark Circles, but it does make the tear trough deeper and the dark Circles worse.

Thin, Translucent Skin Overlying the Orbicularis OculiMuscle

The underlying subcutaneous vascular plexus or vasculature Within the muscle is visualized by the transparent eyelid skin.

Presence of Vein

Large veins going beneath the eyes are another source of dark Circles.

Wrinkles and Laxity

With age, wrinkles and laxity in the infraorbital area worsen the dark circles.

Objective

The role of under eye cream as a factor if dark circle has not been widely reported. To formulate and evalute herbal Under eye cream by using Syzygium Cumini , aloevera, almond oil give the better effect. The aim of this thesis was to gain and understand the effect of dark circle with less side effects and provide the skin with Soothing and nourishing outcome. The influence of a range of factors on dark circles was investigated to ascertain that cream are rapidly absorbed by the skin when compared to other product.

Plan of work

Phase 1: selection, identification, authentication and collection of plant Syzygium Cumini and Aloevera.

Phase 2: washing and drying of the plant material

Phase 3: Phytochemical studies and extraction by ultrasonic bath by using two solvents

1. Distilled water
2. Ethanol

Phase 4: preparation of cream base

Phase 5: Evaluation of under eye cream

Phase 6: compilation of data.

Literature Review

1. **Muniapan Ayyanna et al.,2012,**

Reported That Syzygium Cumini contains Glycoside ,EllagicAcid, Isoquerectin, Kaemferol, Myrecetin, and Flavonoids, alkaloid, jambosine, and glycoside jambolin or antimellin, which halts the diastatic conversion of starch into sugar.

M Hasanuzzaman et al.,2016

Reported That the Syzygium Cumini Seed Extract Contain Alkaloid, Protein And Steroid , Carbohydrates, Phenol, and Tannis.

2. **Dr .Kamla Pathak Cosmetic Science Nirali Prakashan Book Reported 2014**

That aloe vera contain Amino Acid like lucine, Isolucine , Saponins , Glycoside, Vitamins A,C,E,B That Offers Antioxidants Activity.

3. **Amar Surjushe et al.,2008**

Reported That aloeveracontains 75 Potentially Active Constitute Vit, Enzyme, Minerals , Sugar , Lignins, Saponins , Salicylic Acid And Amino Acid.

4. **Hutter JA et al., 2000**

Reported That There Is Presence of Mineral It Provides Calcium , Chromium

, Copper , Selenium , Magnesium , Potassium .

5. **Mounir Ouzir et al. ,2021**

Reported That almond oil contain S 40-45% Of Fixed oil , About 20% of Protein ,Mucilagy. Almond oil Consist Of Mixture of Glycerides Of Oleic , Linoleic, Palmitic, Myristic And Erucic Acid.

6. **Vaishnavi S Patil et al.,2022**

Reported That Causes Of Dark Circle Under Eye Includes Poor Sleep, Aging , Frequent Rubbing Of The Eye's , Overexposure To sun.

8. Vigneshwarn L.V et al.,(2021)

Reported That The Pathomechanisn Of Dark Circle. The Major Pathomechanisn Of Dark Circle And Classification Of Dark Circle Based on The Clinical Pattern Of Pigmentation and Vasculature

Analysis Dark Circle Are Classified FoClassifie Pigmented, Vascular, Structural, Mixed.

9. Mayuri A Parate et al. ,(2020)

Reported That The Morphology Character of Syzygium Cumini, Height 25-30 Meter ,Gravish White In Colour .The Branches Are Wide Extend And Bend AtThe End's ,It Has Deep Tap Root System And Root Is Wiry, While The Lateral Roots Are Many ,Long And Distributed Down The Main Root.

10. Mufseena Petal.,(2022)

Reported That The Evaluation Of The Under Eye Cream Physical Evaluation, Irritancy Test ,Washability Test, pH Test , Phase Separation ,Greasiness.

Botanical information of the selected plants

1. Syzygium Cumini

Fig. No 4 Syzygium Cumini Leaves Scientific

classification (8)

Kingdom – Plantae
Subkingdom – Tracheobionta
Division – Magnoliophyta
Class – Magnoliospida
Subclass – Rosidae
Order – Myrtales
Family – Myrtaceae
Genus – Syzygium
Species – Syzygium Cumini

Syzygium cumini (Family Myrtaceae) is also known as Syzygium jambolanum and Eugenia cumini. Other commonname are Jambul, Black Plum, Java Plum, Indian Blackberry, Jamblang, Jamun etc. Today these trees are found growing throughout the Asian subcontinent, East-ern Africa, South America, and have also naturalized to Florida and Hawaii in the United States of America. (5) The tree fruits once in a year and the berries are sweetish sour to taste. The ripe fruits are used for health drinks, making preserves, squashes, jellies and wine. In association to its dietary use, all parts of the tree and, importantly the seeds are used to treat a range of ailments, the most important being diabetes mellitus. (6)Different parts of the jambolan were also reported for its antioxidant, anti-inflammatory, neuropsycho-phar- macological, anti-microbial, anti-bacterial, anti-HIV and antifugal, anti-diarrheal, antifertility, anorexi-genic, gastroprotective and antiulcerogenic and redio-protective activities. (6) The plant is rich in compounds containing anthocyanins, glucoside, ellagic acid, isoquercetin, kaemferol and myrecetin. Theseeds are claimed to contain alkaloid, jambosine, and glycoside jambolin or antimellin, which halts the diastatic conversion of starch into sugar.(7)Jamun is a very common, large evergreen beautiful tree of Indian subcontinent. The scientific name of Jamun Eugenia jambolana Lam or Syzygium cumini Linn belongs to family Myrtaceae. Syzygium cumini leaves contain tannin, flavonoids and polyphenols which are responsible for antioxidant. (7)

Biological source (8)

Jamun or Indian Black berry is obtained from Eugenia jambolana known as Syzygium cumini Lam. Belonging to family Myrtaceae.

Phytochemical constituent (9,10,31)

Jambolan is rich in compounds containing anthocyanins, glucoside, ellagic acid, isoquercetin, kaemferol and myrecetin. The seeds are claimed to contain alkaloid, jambosine, and glycoside jambolin or antimellin, which halts the diastatic conversion of starch into sugar and seed extract has lowered blood pressure by 34.6% and this action is attributed to the ellagic acid content.(9). The seeds have been reported to be rich in flavonoids, a well-known antioxidant, which accounts for the scavenging of free radicals and protective effect on antioxidant enzymes and also found to have high total phenolics with significant antioxidant activity[9] and are fairly rich in protein and calcium. Java plums are rich in sugar, mineral salts, vitamins C, PP which fortifies the beneficial effects of vitamin C, anthocyanins and Flavonoids. Acetone extract of the leaves showed the presence glycosides, phenols, proteins, resins and saponins while the stem bark extract showed the presence of alkaloids, flavonoids, glycosides, phenols, proteins, resins and saponins. All the above constituents except saponins were detected in the root extract. The seed extract contains alkaloids, carbohydrates, phenols, proteins and tannins. Chloroform extract of the leaves showed the presence of alkaloids, proteins and steroids while root extract contains alkaloids and steroids and that of seed extract alkaloids, carbohydrates, phenols, proteins and tannins, however, alkaloids and tannins were found in the stem bark extract. Methanol extract of the leaves and stem bark showed the presence of alkaloids, carbohydrates, flavonoids, glycosides, phenols, resins, saponins, steroids and tannins while the root extracts contain all the above constituents along with proteins. N-hexane extract of the leaves contain only alkaloids, roots contain alkaloids and resins and that of seeds contain carbohydrates and proteins while alkaloids, proteins and tannins were found in stem bark extract. The present findings reveal the presence of various medicinally important phytochemicals from the plant S. Cumini extracts may have application in traditional system of medicine to cure.(10)

Description: (9)

A slow growing species and can live more than 100 years., A large evergreen tree, growing upto 30 m Tall. Bark pale brown or grayish, smooth, exfoliating into woody scales; the juice from the cut barks Turning purplish-black on exposure. Leaves opposite, ovate or elliptic-lance shaped, narrowed at base,With numerous, fine, parallel lateral nerves, pinkish when young, changing to a leathery, glossy dark Green with a yellow midrib as they mature. Gland dotted. The leaves are with an aroma similar to Turpentine, Flowers greenish-white, small, sweet-scented, in 3-flowered cymes, in axillary or terminal Panicles. Fruits ellipsoid or egg-shaped, smooth, dark purplish-black when ripen; pulp pinkish, juicy.

Use in traditional medicine(11)

All parts of the jambolan can be used medicinally and it has a long tradition in alternative medicine. From all over the world, the fruits have been used for a wide variety of ailments, including cough, diabetes, dysentery, inflammation and ringworm. It is also an ancient medicinal plant with an illustrious medical history and has been the subject of classical reviews for over 100 years. It is widely distributed throughout India and ayurvedic medicine (Indian folk medicine) mentions its use for the treatment of diabetes mellitus. Various traditional practitioners in India use the different parts of the plant in the treatment of diabetes,

blisters in mouth, cancer, colic, diarrhea, digestive complaints, dysentery, piles, pimples and stomachache and Removing Ringworm Infection.The plant has been viewed as an antidiabetic plant since it became commercially available several decades ago. In the early 1960s to 1970s, some preliminary reports on the antidiabetic activity of different parts of jambolan in diabetic animals were reported. Most of these studies have been conducted using crude preparation of the plant without pointing out their chemical profile and antidiabetic action in animals is not fully understood. A number of herbal formulations were also prepared in combination with this plant available in market which showed potential antidiabetic activity and are used regularly by diabetic patients on the advice of the physicians. Different parts of the jambolan were also reported for its antioxidant, anti-inflammatory, neuropsychopharmacological, anti-microbial, anti-bacterial, anti-HIV and antifungal, nitric oxide scavenging, free radical scavenging, anti-diarrheal, antifertility, anorexigenic activities.

Pharmacological Action (11,12,13,14)

Different parts of the jambolan especially fruits, seeds and stem bark possess promising activity antidiabetic activity of various parts of jambolan in diabetic animals. Tea prepared from leaves of jambolan was reported to have antihyperglycemic effect. The stem bark of the plant could induce the appearance of positive insulin staining cells in the epithelia of the pancreatic duct of treated animals and a significant decrease in blood glucose levels was also observed in mice treated with the stem bark by oral glucose tolerance test. Many clinical and experimental studies suggest that, different parts of the jambolan especially fruits and seeds possess promising activity against diabetes mellitus. Despite tremendous advancements have been made in the field of diabetic treatments, several earlier investigations have been reported from the different parts of jambolan with antioxidant, anti-inflammatory, neuropsycho-pharmacological, anti-microbial[36], antibacterial, anti-HIV and antifungal, nitric oxide scavenging, free radical scavenging, anti- diarrheal, antifertility, anorexigenic, gastroprotective and anti-ulcerogenic, behavioural effects and radioprotective activities. Besides the above, the effect of various concentrations of the leaf extracts of the plant on the radiation-induced micronuclei formation was studied by Jagetia and Baliga.

Origin and Distribution (15)

Syzygium cumini is originated from India or the East Indies. It is found in Thailand, Madagascar, Philippines and some other countries. The plant present into sub-tropical region Including Florida, California, Algeria and Israel. It also occurs in lower range of Himalayas Up to an elevation of 1300 meters and in kumaon hills up to 1600 meters. It is widely grown In the larger parts of India from Indo-Gangetic plains in the north to Tamilnadu in the south.

Morphology Character (15)

It is a long lived big evergreen tree, height up to 25-30 meter. The trunk has 3 to 4 meter Circumference with a semi spreading crown up to 10 meter in diameter and it is thick and Grayish white in color. The branches are wide extend and bend at the ends. It has deep tap Root system and root is wiry, while the lateral roots are many, long and distributed down the Main root. Leaves are simple, glossy elliptic, pinnately veined with lateral veins close together. It carries with a few flowers in a panicle. Flowers are light yellow and Hermaphrodite, carry in the axils of leaves on branchlet, calyx tube, calyx lobes, petals, Stamens, white spreading, ovary inferior and 2 celled. Fruit is a berry, purplish red, ovoid and edible.

2 Aloe Vera

Figure No.5 Alovera

Biological source (16)

The biological source of aloe is dried latex of leaves of it. It is also known as curacao aloe. It belongs to the liliaceae family.

Scientific classification

Kingdom –Plantae
Sub Kingdom Tracheobionta
Division – Magnoliophyta
Class –Lilipsida
Subclass – Lilidae
Order – Asparagales
Family-Asphodelaceae
Species – Alovera

Aloe vera is a natural product that is now a day frequently used in the field of cosmetology. Though there are various indications for its use, controlled trials are needed to determine its real efficacy. The Aloe vera plant has been known and used for centuries for its health, beauty, medicinal and skin care properties. The name Aloe vera derives from the Arabic word “Alloeh” meaning “shining bitter substance,” while “vera” in Latin means “true.” 2000 years ago, the Greek scientists regarded Aloe vera as the universal panacea. The Egyptians called Aloe “the plant of immortality.” Today, the Aloe vera plant has been used for various purpose in dermatology. The botanical name of Aloe vera is Aloe barbadensis miller. It belongs to Asphodelaceae (Liliaceae) family, and is a shrubby or arborescent, perennial, xerophytic, succulent, pea- green color plant. It grows mainly in the dry regions of Africa, Asia, Europe and America. In India, it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu.Its an ingredient in many cosmetic because it heals, moisturizers ,and soften skin. A soothing gel may be obtained by cutting the Aloe vera leaf. The extract is the most ingenious mixture of an antibiotic, an astringent coagulating agent, a pain inhibitor and a growth stimulator also called a wound hormone whose function is to accelarate the healing of injured surfaces. Its applied externally for sunburn, scratch.(17)

Chemical constituents (17)

Aloe contain two classes of aloins :

1. Nataloins
2. Barbaloins

The second group may be divided into a-barbaloins, obtained from Barbados aloes, and bbarbaloins, obtained from socotrine and Zanzibar aloes.Aloe vera contain amino acid like leucine, isoleucine, saponin and Zanzibar aloes. Aloe vera also contains amino acids like leucine, isoleucine, saponin glycosides that provide cleansing action, vitamins A, C, E, B, Choline, folic acid that offer antioxidant activity. The antiseptic property of aloe vera is due to presence of six antiseptic agents namely lupeol, salicylic acid, urea nitrogen, cinnamonic acid, phenols and sulphur. these compounds have inhibitory action of fungi, bacteria.

Active components with its properties: (18,19)

Aloe vera contains 75 potentially active constituents: vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids.

Vitamins: It contains vitamins A (beta-carotene), C and E, which are antioxidants. It also contains vitamin B12, folic acid, and choline. Antioxidant neutralizes free radicals.

Enzymes: It contains 8 enzymes: aliiase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase. Bradykinase helps to reduce excessive inflammation when applied to the skin topically, while others help in the breakdown of sugars and fats.

Minerals: It provides calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc. They are essential for the proper functioning of various enzyme systems in different metabolic pathways and few are antioxidants.

Sugars: It provides monosaccharides (glucose and fructose) and polysaccharides: (glucomannans/polymannose). These are derived from the mucilage layer of the plant and are known as mucopolysaccharides. The most prominent monosaccharide is mannose-6-phosphate, and the most common polysaccharides are called glucomannans [beta-(1,4)-acetylated mannan]. Acemannan, a prominent glucomannan has also been found. Recently, a glycoprotein with antiallergic properties, called alprogen and novel anti-inflammatory compound, Cglucosylchromone, has been isolated from Aloe vera gel.

Anthraquinones: It provides 12 anthraquinones, which are phenolic compounds traditionally known as laxatives. Aloin and emodin act as analgesics, antibacterials and antivirals.

Fatty acids: It provides 4 plant steroids; cholesterol, campesterol, β-sisosterol and lupeol. All these have anti-inflammatory action and lupeol also possesses antiseptic and analgesic properties.

Hormones: Auxins and gibberellins that help in wound healing and have anti-inflammatory action.

Others: It provides 20 of the 22 human required amino acids and 7 of the 8 essential amino acids. It also contains salicylic acid that possesses anti-inflammatory and antibacterial properties. Lignin, an inert substance, when included in topical preparations, enhances penetrative effect of the other ingredients into the skin. Saponins that are the soapy substances form about 3% of the gel and have cleansing and antiseptic properties.

Aloe vera has been recommended for skin care in number of ways: (17)

1. Relieves the burned skin caused by sun
2. Is an outstanding skin moisturizers
3. Smmoth and glowing skin can be achieved with the help of aloe
4. Is beneficial for dry skin
5. Helps in restoring skin natural beauty.
6. Is helpful in curing blister, insect bites and any allergic reaction.
7. Helps in eczema, burns, inflammation, wound, psoriasis.
8. Aloe vera extracts have antibacterial and antifungal activities which help in the treatment of minor skin infection.

Uses (18,19)

Aloe is used topically (applied to the skin) and orally. Topical use of aloe is promoted for acne, lichen planus (a very itchy rash on the skin or in the mouth), oral submucous fibrosis, burning mouth syndrome, burns, and radiation-induced skin toxicity. Oral use of aloe is promoted for weight loss, diabetes, hepatitis, and inflammatory

bowel disease (a group of conditions caused by gut inflammation that includes Crohn's disease and ulcerative colitis).

Pharmacological activity of aloe vera (20)

- Skin Hydration action anti-aging effect
- Wound healing effect
- Anti-inflammatory effects
- Antibacterial effect
- Antifungal effect
- Antiviral effect
- Antioxidant property

Cosmetic Uses:

Generally, Aloe vera has many uses both for humans and animals. Three distinct preparations of the plant are used: Aloe vera latex, Aloe vera gel and Aloe vera whole leaf extract, whose biological ingredients may act alone or in synergy. The use of Aloe vera in cosmetics is not new; there many of them on the market which use Aloe vera in concentrations varying from 1 to 98%. It is well known that Aloe gel enables the plant to hold moisture for extremely long periods of time and has soothing effects as well. So, Aloe vera has found an extensive application in the cosmetic and toiletry industries, such as moisturizers, cleansers, sun lotions, toothpastes, mouthwashes, shaving creams, deodorants and shampoos. In Aloe-derived ingredients used in cosmetics anthraquinone levels should not exceed 50 ppm, concentrations too low to induce phototoxicity. In the United States the Food and Drug Administration (FDA) has approved the external use of aloe vera gel only in cosmetic ingredient.

Almond oil

Fig No. 6 Almond Oil

Biological source (20)

It consists of dried ripe seeds of plant Prunus amygdalus Batsch var amara.

Family:- Rosaceae.

Scientific classification

Kingdom – Plantae
Subkingdom – viridiplantae
Division –Tracheophyta
Class –Magnoliospida
Order –Rosales
Family – Rosaceae
Genus – PrunisL
Species – Prunisdulcis

Almond oil, a rich source of macronutrients and micronutrients, is extracted for food flavorings and the cosmetics industry. In recent years, the need for high-quality and high-quantity production of almond oil for human consumption has been increased. The present review examines the chemical composition of almond oil, storage conditions, and clinical evidence supporting the health benefits of almond oil. From the reviewed studies, it appears that almond oil contains a significant proportion of poly and monounsaturated fatty acids, with oleic acid as the main compound, and an important amount of

tocopherol and phytosterol content. Some variations in almond oil composition can be found depending on the kernel's origin and the extraction system used. Some new technologies such as ultrasonic-assisted extraction, supercritical fluid extraction, subcritical fluid extraction, and salt-assisted aqueous extraction have emerged as the most promising extraction techniques that allow eco-friendly and effective recovery of almond oil. This safe oil was reported by several clinical studies to have potential roles in cardiovascular risk management, glucose homeostasis, oxidative stress reduction, neuroprotection, and many dermatologic and cosmetic applications. However, the anticarcinogenic and fertility benefits of almond oil have yet to be experimentally verified.(20)

Chemical constituents (21)

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. Almond oil consists of a mixture of glycerides of oleic (62– 86%), linoleic (17%), palmitic (5%), myristic (1%), palmitoleic, margaric, stearic, linolenic, arachidic, gadoleic, behenic, and erucic acid. Bitter almond oil contains benzaldehyde and 2–4% of hydrocyanic acid. Purified volatile oil of bitter almonds has all its hydrocyanic acid removed and, therefore, consists mainly of benzaldehyde. The unsaponifiable matter contains β-sitosterol, cholesterol, brassicasterol and tocopherols.

Geographical Source

The oil is mainly produced from almonds grown in the countries bordering the Mediterranean (Italy, France, Syria, Spain, and North Africa) and Iran.

Uses

Expressed almond oil is an emollient and an ingredient in cosmetics. Almond oil is used as a laxative, emollient, in the preparation of toilet articles and as a vehicle for oily injections. The volatile almond oils are used as flavouring agents.(22) This safe oil was reported by several clinical studies to have potential roles in cardiovascular risk management, glucose homeostasis, oxidative stress reduction, neuroprotection, and many dermatologic and cosmetic applications.

Almond oil is also useful to treat different skin conditions like (22)

- Remove pigmentation
- Psoriasis
- It also has powerful antifungal properties
- Dermatitis
- Eczema
- Also help to heal sun damage
- Remove the other fungal infection like Ringworm

MATERIALS AND METHODS

Material

1) Plants Materials

The leaves of Syzygium cumini were collected from a single tree during the second week of April 2023 at Ahmednagar. The leaves were cleaned, air-dried at room temperature on a cool dry place away from direct sunlight, and finally ground to a coarse powder The powder was then divided into Two for the extraction using two different solvent such aswater and ethanol And Authenticated By Head Of Botany Department Radhabai Kale Mahila Mahavidyalaya Ahmednagar.

a) Aloe Vera (L) Burn F. (Liliaceae) Leaves.

b) Syzygium Cumini (L) Skeels (Myrtaceae) Leaves.

B) Chemical

Steric acid, Lanolin, cetyl alcohol, Almond oil, Propyl paraben, Methyl paraben, Glycerine, Triethanoline, Propylene glycol.

C) Equipment

1. Sonicator Bath
2. Digital Balance
3. 3.Mechanical Stirrer
4. Hot Air Oven
5. Copper Sieve
6. pH Meter
7. Desiccator
8. Refrigerator

Extraction Definition

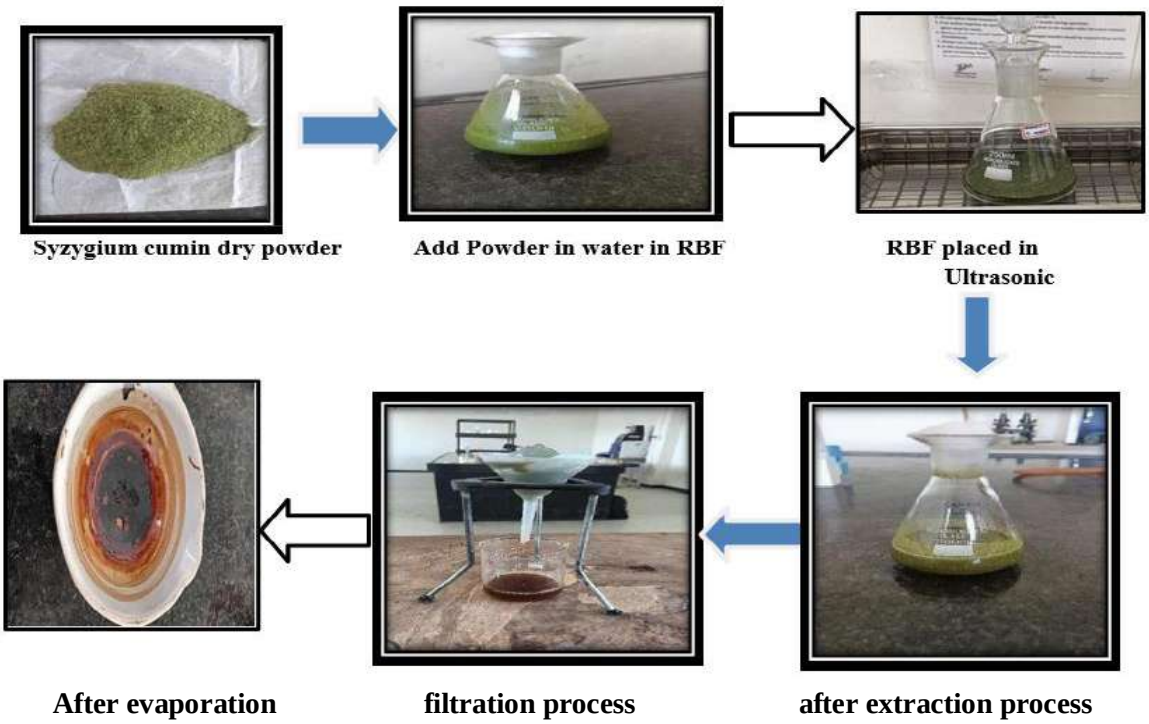
Its a process of separation of soluble materials from an insoluble residue, either liquid or solid, by treatment with suitable liquid solvent. The process of extraction Should be controlled by mass transfer. Masss transfer is a unit operation, which involve the transfer of soluble material from solid to a fluid. There are many different methods of processing medicinal plants for therapeutic uses. Some are extremely basic simply involving the crushing of the fresh whole plant or parts of plant and using directly as medicine.

Procedure

Preparation of Syzygium Cumini Extract

Syzygium Cumini leaves were collected and wash with distilled water and dried at room temp for 8 days. Then 10 gm of Syzygium Cumini leaf powder Added 100ml of Distilled water Transferred in Round bottom Flask and keep the RBF in Sonicator Bath Then the Solution was heated at 50 Degree for 90 min. After heating remove the RBF from ultrasonic bath and filtered to remove the impurities. Then the filter product in which a clear extract of Syzygium cumini leaves was used in the preparation.

Procedure Of Extraction



Preliminary Qualitative phytochemical screening of the extract (24,25,26) Preliminary Phytochemical screening of the extracts and fraction were carried out performing simple chemical tests.

Alkaloids

Dragendroff's Test:

Filtrates were treated with Dragendroff's reagent (solution of Potassium Bismuth Iodide). Formation of red precipitate indicates the presence of alkaloids.

Mayer's Test:

To a few ml of plant sample extract, two drops of Mayer's reagent are added along the sides of test tube. Appearance of white creamy precipitate indicates the presence of alkaloids.

Valser's Test:

A few drops of Valser"s reagent is added to few ml of plant extract along the sides of test tube. A reddish- Brown precipitate confirms the test as positive.

Wagner's Test:

A few drops of Wagner"s reagent are added to few ml of plant extract along the sides of test tube. A reddish- Brown precipitate confirms the test as positive.

Flavonoids

Alkaline Reagent Test:

Extracts were treated with few drops of sodium hydroxide solution. Formation of intense yellow colour, which becomes colorless on addition of dilute acid, indicates the presence of flavonoids.

Saponins:

Forth test The extract (50 mg) is diluted with distilled water and made up to 20 ml. The suspension is shaken in a graduated cylinder for 15 minutes. A two cm layer of foam indicates the presence of saponins.

Tannins

Ferric chloride Test:

The extract (50 mg) is dissolved in 5 ml of distilled water. To this few drops of neutral 5% ferric chloride solution are added. A dark green colour indicates the presence of phenolic compound.

Glycosides:

For 50 mg of extract is hydrolysed with concentrated hydrochloric acid for 2 hours on a water bath, filtered and the hydrolysate is subjected to the following tests. Legal's Test: 50 mg of extract is dissolved in pyridine; sodium nitroprusside solution is added and made alkaline using 10% NaOH. Presence present of Glycosides it indicates by pink colour.

Phenols:

Lead Acetate Test:

The extract (50 mg) is dissolved in of distilled water and to this 3 ml of 10% lead acetate solution is added. A bulky white precipitate indicates the presence of phenolic compounds.

Protein:

The extract (100 mg) is dissolved in 10 ml of distilled water and filtered through Whatmann No. 1 filter paper and the filtrate is subjected to test for proteins.

Millon's Test:

To 2 ml of filtrate few drops of Millon‟s reagent are added. A white precipitate indicates the presence of proteins.

Carbohydrates Molish's Test.

To 2 ml of plant sample extract, two drops of alcoholic solution of α- naphthol are added. The mixture is shaken well and few drops of concentrated sulphuric acid is added slowly along the sides of test tube. A violet ring indicates the presence of carbohydrates.

Triterpenoids:

Salkowski's Test:

Extracts were treated with chloroform and filtered. The filtrates were treated with few drops of Conc. Sulphuric acid, shaken and allowed to stand. Appearance of golden yellow colour indicates the presence of triterpenes.

Phytosterols:

Libermann-Burchard's Test: Extracts were treated with chloroform and filtered. The filtrates were treated with few drops of acetic anhydride, boiled and cooled. Conc. Sulphuric acid was added. Formation of brown ring at the junction indicates the presence of Phyto sterols.

Fixed Oils and Fats:

Spot Test:

A small quantity of extract is pressed between two filter papers. Oil stain on the paper indicates the presence of fixed oils.

Formulation Table

Ingredient	Quantity	Quantity	Role
	1st Trial	2nd Trial	
Steric Acid	5gm	10gm	Hardening Agent
Lanolin	1 gm	1gm	Emollient
Almond oil	1ml	2ml	Emollient
Cetyl alcohol	1gm	2gm	Conditioning agent
Propyl paraben	0.1gm	0.1gm	Preservative
Glycerine	3ml	6 ml	Humectant
Triethanolamine	1ml	2ml	Emulsifier
Methyl paraben	0.1gm	0.1 gm	Preservative
Aloevera	1gm	2gm	Anti ageing
Vitamin E Capsule	2 cap	2 cap	Dark Circles remover
Jamun extract	1ml	2 gm	Active

Selection of Base

Stearic acid and Triethanolamine base cream was formed, it is called Moisturizing base which help to moisturize the under eye skin area and prevent from drying. Cream contain silicone oil, lanoline which help to give emoiliency property to cream and also Help to reduce fine lines and wrinkles from under eye skin.

Procedure Phase A:

The emulsifying agent stearic acid was dissolved in cetyl alcohol,Lanolin, almond oil, propylparaben and heated to 70˚c

Phase B:

In this phase mix the water soluble components like methylparaben, triethanolamine, Propylene

glycol, and heated to 70˚c. It can be named as aqueous phase. After heating aqueous phase was added into oil phase at same temperature with continuous Trituration the smooth & homogenous cream was prepared. After fall in temperature at 40ºC. added Jamun aqueous extract,vit Eand glycerine again triturate.

Evaluation Test

1. Physical evaluation

In this test cream was observed for its color, odour, texture and state.

2. Irritancy test

Mark the area (1 cm2) on the left hand dorsal surface. Then the cream was applied to that area And the time was noted. Then it was checked for irritancy, erythema and edema if any, on an Interval up to 24 hrs and reported.

3. Washability test

The cream was applied on the hand and observed under running water.

4. pH test

The pH meter was calibrated with the help of a standard buffer solution. Weigh 0.5 gm of Cream dissolved in 50 ml of distilled water and pH was measured with the help of a digital pH meter.

5. Phase separation

The prepared cream was placed in a closed container at a temperature from 25 – 1000C and Away from light. The phase separation was checked for 30 days . Change in the phase Separation was observed.

6. Greasiness

The cream was applied on the skin in the form of a smear and checked whether the smear was Oily or grease-like.

7. Phase separation

The prepared cream was placed in a closed container at a temperature from 25 – 1000C and Away from light. The phase separation was checked for 30 days. Change in the phase Separation was observed.

Evaluation Test of Under Eye Cream

Sr. No.	Evaluation Parameter	Observation
1.	Colour	Cream Like
2.	Odour	Pleasant
3.	Texture	Smooth
4.	State	Semisolid
5.	PH	5 to 6
6.	Skin Irritation	Non-Irritation
7.	Washability Test	Easily Washable
8.	Phase Saperation	No Phase Seperation
9.	Greasiness	Oily or Grease Like
10.	Consistency	Good
11.	Viscosity	0.93

RESULT

Physical evaluation

In this color, odor, texture and state of the formulation were checked.

1. colour – cream
2. Odour – Pleasant
3. Textute – smooth
4. State – semisolid

Irritancy test

Mark the area (1 cm2) on the left hand dorsal surface. The cream was applied on the area and The time was noted. The irritancy, edema, and erythema was noted. The formulation showed no sign of irritancy, edema, and erythema

Washability

Washability test was carried out by applying a small amount of cream on the hand and then

Fig no.7 After Apply Formulation

Fig no.8 After Wash with Water

pH test

The pH test was performed by using a pH meter. The pH of the cream was found to be in the Range of 5 to 6 Which is good for the pH around the eye.

Phase separation

Then phase separation was checked for 30 days, and no phase separation was observed.

Greasiness

Cream was applied on the skin surface in the form of a smear and checked whether smear Was oily or greasy like.

Fig No. 9 Under Eye Cream

CONCLUSION

The above data research has been carried out with the aim of developing formulation containing traditional Substance and studying their effectiveness in removal of the eye contours by in-vitro techniques. The present Study involves formulation development and evaluation of under eye cream, the present work mainly Focuses on potential of extract from cosmetic purpose. It helps to reduce dark circle from under eye area Further studies can be conducted for more accurate result like anti-tyrosine's. The prepared Eye cream was o/w type emulsion, hence can be easily washed with plain water which gives Better customer compliance. Our study indicated that the formulations were more stable. The Prepared formulations showed good spreadability, no evidence of phase separation. Formulations had almost a constant pH, emollient property, they were not greasy and easily Removable after the application. The stable formulations were safe and skin irritations and Allergic sensitizations were scarce. The formulation contains water extract of Syzygium Cumini leaves which has antioxidant property because of flavonoid content in extract.

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