FABRICATION AND CHARACTERISATION OF HERBAL UNDER-EYE CREAM

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ABSTRACT

The goal of this study includes the fabrication and characterisation of herbal under eye cream formulated with the combination of three natural ingredients: *Glycyrrhiza glabra, Hemidesmus indicus*, and *Aloe vera*. The aim of this study was to develop an effective and safe topical product for the delicate under eye area, targeting common concerns such as dark circles, puffiness, and fine lines.

The cream was prepared using a formulation, incorporating extracts of *Glycyrrhiza glabra, Hemidesmus indicus*, and *Aloe vera*. The fabrication process involved extraction of active constituents from the herbs, followed by formulation development and stability testing. Various physicochemical properties such as pH, spreadability, and texture were evaluated to ensure product quality and consistency.

The results demonstrated the successful development of herbal under eye cream containing *Glycyrrhiza glabra, Hemidesmus indicus*, and *Aloe vera*. The cream exhibited desirable physicochemical properties, including optimal pH, good spreadability. The findings suggest that the developed cream holds promise as a natural and effective option for addressing under eye concerns. Further research and clinical studies are needed to explore its efficacy and safety in a larger population.

Key words: Herbal under eye cream; *Glycyrrhiza glabra; Hemidesmus indicus; Aloe vera*; dark circles

INTRODUCTION

The term "cosmetic" originates from the Greek word "kosmesticos," meaning to decorate or beautify. It refers to any substances used for enhancing appearance. The usage of the word "cosmetics" can be traced back to Ancient Rome. Cosmetics are employed to improve one's appearance and are commonly used by both men and women on a daily basis, such as creams, gels, and colognes. Creams are often utilized as facial cleansers and there have been recent developments in anti-aging creams that help maintain youthful-looking skin. Effective cleansing agents include cleansing cream, soap, and water. Cosmetic creams also provide nourishment and moisture to rough, dry, and chapped skin, serving as a lubricant and removing unwanted impurities from the skin.

Creams are topical preparations applied to the skin. They are described as viscous liquids or semi-solid emulsions, either oil-in-water or water-in-oil types, with consistency varying based on the proportions of oil and water. Creams serve cosmetic purposes, such as cleansing, beautifying, improving appearances, providing protection, or serving therapeutic functions. These topical formulations are designed for localized effects, delivering drugs to the underlying skin layer or mucous membranes. They are primarily used for targeted drug delivery in skin disorders. Creams, both medicated and unmedicated, are considered pharmaceutical products, developed using techniques from the pharmaceutical industry. They are extensively used for treating various skin conditions or dermatoses. Creams can be categorized as ayurvedic, herbal, or allopathic, depending on individual needs and specific skin conditions. They contain one or more drug substances dissolved or dispersed in a suitable base. Creams can be classified as either oil-in-water or water-in-oil emulsions, traditionally referred to as cold cream or vanishing cream, respectively.

Types of creams:

- Oil-in-Water (O/W) creams: These creams consist of small droplets of oil dispersed in a continuous aqueous phase. In an O/W emulsion, the oil is distributed as droplets throughout the water-based phase.

- Water-in-Oil (W/O) creams: These creams consist of small droplets of water dispersed in a continuous oily phase. In a W/O emulsion, water acts as the dispersed phase while oil serves as the dispersion medium.[1]

Advantages and Disadvantages of cream as a topical drug delivery system.

Advantages

- Avoidance of first-pass metabolism
- Avoidance of risk
- Convenience and ease of application
- Minimal side effects on other body organs
- Easy termination of medications when needed
- Maintenance of consistent drug levels

Disadvantages

- Skin irritation
- Low skin penetrability of some drugs
- Possibility of allergic reactions
- Lower plasma concentration
- Poor effectiveness with larger particle size drugs

CLASSIFICATION OF CREAMS

All the skin creams can be classified on different basis:

1. According to function, e.g. cleansing, foundation, massage, etc.
2. According to characteristics properties, e.g. cold creams, vanishing creams, etc.
3. According to the nature or type of emulsion.

Types of creams according to function, characteristic properties and type of emulsion:

Make-up cream: These creams are specifically designed for use as a foundation or base for makeup application.

Cleansing cream: These creams are used for cleansing the skin, removing impurities, and maintaining skin hygiene.

Winter cream: These creams are formulated to provide extra moisturization and protection during the cold winter months when the skin tends to become dry and dehydrated.

All-purpose cream and general creams: These creams have multiple functions and can be used for various purposes, such as moisturizing, nourishing, and improving the overall appearance of the skin.

Night cream and massage creams: Night creams are intended to be applied before bed to provide overnight hydration and rejuvenation to the skin. Massage creams are formulated with ingredients that facilitate smooth gliding during massages.

Skin protective cream: These creams are designed to create a protective barrier on the skin, shielding it from environmental factors like harsh weather conditions or pollutants.

Hand and body creams: These creams are specifically formulated to moisturize and nourish the hands and body, keeping the skin soft, supple, and hydrated.[1]

Ingredients used in cream

The cream preparation utilizes various ingredients, including:

- Water: It acts as a solvent to dissolve other components of the cream. Water is a crucial raw material widely used in cream formulations and should be free from toxins, pollutants, microbes, and pathogens.
- Oil, fats, and waxes: These essential ingredients serve multiple functions in cream formulation. Waxes act as emulsifiers, fats act as thickeners, and oils function as perfuming agents and preservatives. Oils can be categorized into mineral oils (e.g., light liquid paraffin, heavy liquid paraffin, liquid petroleum) and glyceride oils (such as almond oil, Arachis oil, castor oil, coconut oil).
- Vegetable oil: It acts as a barrier to prevent water loss from the skin and increases the thickness of the liquid and oil phase. Examples include almond oil, germ oil, avocado oil, and sunflower oil.
- Waxes: These are used in cream preparation, such as carnauba wax, ceresin, and spermaceti.
- Fats: Various types of fats are used in cream formulation, derived from plants, minerals, or animals. Glyceride oils and fats consist of a mixture of higher fatty acids and glycerin, which can form soap or fatty acid components (saturated

group: lauric, margaric, palmitic, stearic acids; unsaturated group: oleic acid) and glycerin through saponification using different processes.

- Lanolin: It acts as a lubricant, providing a smooth appearance to the skin. Lanolin can be categorized as hydrous lanolin (containing 25%-30% water) or anhydrous lanolin (with a melting point of 38°C-42°C) and a slight odour.
- Colours: Colours are added to improve the physical appearance of the cream. They can be obtained from natural sources or synthetically produced in laboratories.
- Emollients: Emollients serve as moisturizing agents, softening and hydrating the skin. They help prevent water loss and lubricate the skin.
- Humectants: These multifunctional ingredients act as moisturizers and exfoliating agents. Examples include glycerin, hydroxyethyl urea, betaine, sodium PCA, and sodium-L-Lactate.
- Perfumes: Perfumes are added to mask any unpleasant odors and enhance the fragrance of the cream. Natural perfumes, such as white blossoms, rosy reams, and orange blossom, are commonly used in cream preparation.
- Vitamins: Vitamins play a vital role in maintaining the physiological function of the skin and overall body health.
- Preservatives: Preservatives are crucial ingredients that help preserve the cream formulation, protecting it from microbial growth and contamination during storage and use by consumers.[2]

HERBAL COSMETICS

Herbal cosmetics, also known as "natural cosmetics," are experiencing increasing demand due to their lack of side effects. Ayurveda, an ancient system of medicine, provided early knowledge about the power of nature. Using herbs and plants, Ayurvedic cosmetics were created, offering both beautification and protection against external influences. Today, herbal cosmetics, or herbal Ayurvedic cosmetics, continue to utilize the valuable resources provided by nature. Traditional medicines derived from medicinal plants, minerals, and organic matter are widely used, offering a diverse range of herbal cosmetic products for daily use. Herbal conditioners, soaps, face washes, shampoos, and more are highly regarded by the masses. One of the notable benefits of herbal cosmetics is their composition solely of herbs and shrubs. The natural ingredients in these herbs do not have any adverse effects on the human body; instead, they provide supplements and

beneficial minerals. Popular herbs used in herbal cosmetics include saffron (kesar), ashwagandha, sandalwood (Chandan), and many others enriched with essential nutrients.

Herbalists today believe in assisting people in achieving good health through natural sources. Herbs are considered more as food than medicine, as they are complete, all-natural, and pure, aligning with nature's intentions. When herbs are consumed, they aid in purifying and detoxifying the body. Unlike chemically synthesized drugs with concentrated compounds that may cause various side effects, herbs effectively support the body's natural defense mechanisms. Herbs do not provide instant cures but instead help bring the body into harmony with nature. People have been using herbs for thousands of years in various ways, such as perfumes, disinfectants, flavorings in cooking, protection against germs, and medicinal remedies.

Herbal cosmetics are prepared by combining cosmetic ingredients with one or more herbal ingredients to address different skin issues and enhance beauty. The chemical formulations of these cosmetic products incorporate natural additives like waxes, oils, natural colors, fragrances, and plant parts such as leaves. Cosmeceuticals lie between pure cosmetics (like lipstick and rouge) and pure drugs (like antibiotics and corticosteroids) in terms of their effects. Cosmetic products are an excellent option for addressing skin problems such as hyperpigmentation, wrinkles, aging, and rough texture. The demand for herbal cosmetics is rapidly growing due to their lower cost, absence of side effects, environmental friendliness, and safety. Furthermore, herbal cosmetics have a promising future compared to synthetic alternatives. Proper regulation and standardization of herbal ingredients will contribute to significant growth in the field of herbal cosmetics.

Advantages of Herbal Cosmetics:

Herbal cosmetics offer several advantages due to their natural properties, which are described below:

Natural Products:

Herbal cosmetics are derived from natural ingredients and are free from harmful synthetic chemicals. This makes them safer for the skin compared to synthetic alternatives.

Safe to Use:

Natural cosmetics have undergone testing and approval by dermatologists, ensuring their safety for use. They are hypoallergenic and can be used without the worry of skin rashes or itchiness, as they are made from natural ingredients.

Compatibility with All Skin Types:

Regardless of skin tone or type, herbal cosmetics provide options for everyone. They are mostly suitable for all. Even individuals with oily or sensitive skin can use them without the fear of worsening their skin condition.

Wide Selection:

Herbal cosmetics offer a wide range of choices at more affordable prices compared to synthetic alternatives. During sales, they are often sold at even lower prices. With approximately 80% of the world population relying on natural products for healthcare, these options are becoming increasingly popular due to rising costs and side effects associated with modern medicine.

No Side Effects:

Synthetic beauty products can irritate the skin, cause pimples, and lead to dryness or oiliness. However, natural cosmetics eliminate these concerns. The use of natural ingredients ensures no side effects, allowing for their application anytime and anywhere.

Cosmeceuticals:

Cosmeceuticals, a rapidly growing segment of the beauty industry, combine cosmetic and pharmaceutical properties. These products aim to improve skin health and beauty by delivering specific results, such as acne control, anti-wrinkle effects, and sun protection.[3]

ALOE VERA

Aloe vera, a natural product widely used in the field of cosmetology, has a long history of being recognized and utilized for its health, beauty, medicinal, and skin care properties. The term "*Aloe vera*" is derived from the Arabic word "Alloeh," which means "shining bitter substance," and the Latin word "vera," which means "true." The ancient Greeks considered *Aloe vera* to be a universal remedy, while the Egyptians referred to it as "the plant of immortality." In present times, *Aloe vera* finds applications in various

dermatological practices. The botanical name assigned to *Aloe vera* is *Aloe barbadensis miller*, and it belongs to the Asphodelaceae family. It is a shrubby or arborescent, perennial, xerophytic, succulent plant with a pea-green color.[4]

Fig 1: *Aloe vera*

The gel extracted from the leaves of *Aloe vera*, which is colorless and has a mucilaginous consistency, has found extensive use in both pharmacological and cosmetic applications. *Aloe vera* has long been recognized for its versatile applications in both human and animal care. It can be utilized in various forms, including *Aloe vera* latex, *Aloe vera* gel, and *Aloe vera* whole leaf extract, each containing unique biological components that can act independently or synergistically. The cosmetic industry has embraced the use of *Aloe vera* for quite some time, with a wide range of products available on the market containing concentrations of *Aloe vera* ranging from 1% to 98%. One of the remarkable properties of *Aloe vera* gel is its ability to retain moisture for extended periods and provide soothing effects. As a result, *Aloe vera* has found widespread use in cosmetics and personal care products such as moisturizers, cleansers, sunscreens, toothpastes, mouthwashes, shaving creams, deodorants, and shampoos.[5]

Scientific classification of *Aloe vera* [6]

Kingdom	Plantae
Order	Asparagales
Division	Spermatophyte
Subdivision	Angiospermae
Class	Monocotyledoneae
Genus	*Aloe*
Species	*barbadensis mill*

The presence of mucopolysaccharides in *Aloe vera* contributes to its moisturizing and anti-aging effects by aiding in the retention of moisture in the skin. *Aloe vera* stimulates fibroblast activity, which is responsible for the production of collagen and elastin fibers, resulting in improved skin elasticity and reduced wrinkles. Additionally, Aloe vera has the ability to promote cohesion among the superficial epidermal cells, effectively softening the skin. The amino acids present in *Aloe vera* further contribute to the softening of hardened skin cells, while zinc acts as an astringent, tightening the pores. Research has also demonstrated the moisturizing effects of *Aloe vera* in the treatment of dry skin caused by occupational exposure, with the use of *Aloe vera* gel gloves leading to improved skin integrity, reduced appearance of fine wrinkles, and decreased erythema. Furthermore, *Aloe vera* exhibits anti-acne properties, providing additional benefits for skin health.[4]

Aloe vera is known for its significant antioxidant properties. It contains antioxidants such as glutathione peroxidase, superoxide dismutase enzymes, and phenolic antioxidants, which contribute to its antioxidant effects. These antioxidants play a crucial role in neutralizing harmful free radicals and protecting the body against oxidative stress. This antioxidant activity helps maintain the quality of blood by improving its ability to transport oxygen and nutrients more effectively to the body's cells. As a result, *Aloe vera* promotes overall health and well-being.[7]

GLYCYRRHIZA GLABRA

Glycyrrhiza glabra, commonly known as Liquorice or licorice or Mulethi in Hindi and referred to as Yashtimadhu in Ayurveda, holds significant importance in Indian medicine, home remedies, folk medicine, and Ayurveda. Liquorice, the root of *Glycyrrhiza glabra*, is used to extract a sweet flavor and is cultivated primarily for its rhizomes, which contain the compound glycyrrhizin, known to be 50 times sweeter than sugar. Phytochemical analysis of *Glycyrrhiza glabra* root extract reveals the presence of saponin triterpenes (glycyrrhizin, glycyrrhetinic acid, and liquirtic acid), flavonoids (liquirtin, isoflavonoids, and formononetin), along with coumarins, sugars, amino acids, tannins, starch, choline, phytosterols, and bitter principles.[8] Liquorice root extract, derived from *Glycyrrhiza glabra L.*, contains glabridin, an isoflavane known for its ability to inhibit tyrosinase, the

enzyme responsible for melanin synthesis. Additionally, other active compounds found in liquorice extract, such as glabrene, Licochalcone A, and Isoliquiritin, contribute to the inhibition of tyrosinase activity. Liquiritin, present in liquorice extract, aids in the dispersion of melanin, thereby promoting skin lightening.[9]

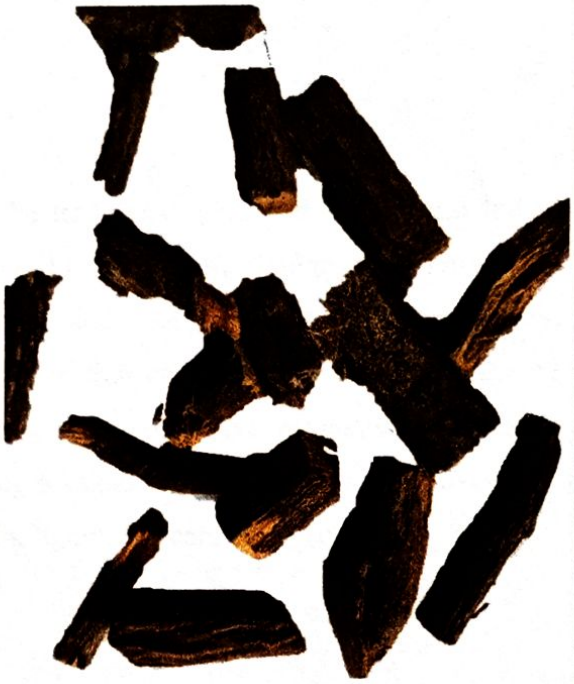

Fig 2: *Glycyrrhiza glabra*

Scientific classification of *Glycyrrhiza glabra*.[10]

Kingdom	Plantae
Division	Angiospermae
Class	Dicotyledonae
Order	Rosales
Family	Fabaceae
Genus	*Glycyrrhiza*
Species	*glabra Linn*

Glycyrrhiza glabra, a plant widely utilized in herbalism and traditional medicine worldwide, possesses significant ethnopharmacological value. It contains valuable phytoconstituents that exhibit diverse therapeutic properties such as anti-inflammatory, anti-bacterial, anti-fungal, anti-diabetic, antiviral, anti-ulcer, antitussive, antioxidant, skin whitening, and anti-diuretic effects. Furthermore, research has demonstrated that the roots of *Glycyrrhiza glabra* possess additional benefits, including antidepressant, hypotensive, hepatoprotective, spasmolytic, and memory-enhancing activities. The roots of liquorice are particularly valued for their demulcent properties, providing soothing and protective effect.[8]

HEMIDESMUS INDICUS

Hemidesmus indicus, widely recognized in the traditional medicinal system and Indian Pharmacopoeia, is a well-known herbal remedy. It is an aromatic climbing plant commonly referred to as "Anantmool" or "Indian sarsaparilla" and belongs to the Apocynaceae family. The name "Anantmool" derives from the combination of two words, "Anant" meaning eternal and "mool" meaning root, thus signifying "the eternal root." *Hemidesmus indicus* is rich in various bioactive compounds, including alkaloids, steroids, terpenoids, flavonoids, saponins, phenolic compounds, tannins, insulin, lignin, and cardiac glycoside.[11]

Scientific Classification of *H. indicus*

Taxonomical Rank	
Kingdom	Plantae
Phylum	Tracheophyta
Class	Magnoliopsida
Order	Gentianales
Family	Apocynaceae
Genus	*Hemidesmus*
Species	*Indicus*
Common Name	Indian Sarsaparilla

Hemidesmus indicus, a widely recognized medicinal plant, finds extensive usage in Ayurveda, Unani, and Siddha systems of medicine. It is employed in the preparation of remedies targeting various ailments such as biliousness, blood diseases, diarrhea, skin diseases, respiratory diseases, fever, bronchitis, eye diseases, burning sensation, and gastric disorders. This plant is also known by other names such as sariva false sarsaparilla and Indian sarsaparilla. In addition to these names, it is referred to as Nannari in Tamil and Malayalam. *Hemidesmus indicus* contains a range of phytoconstituents, including glycosides, flavonoids, tannins, sterols, and volatile oils. The root of

Hemidesmus indicus is the most valuable part, known for its sweet taste and pleasant aroma due to the presence of an essential oil containing p-methoxy salicylic aldehyde as a major component.

Fig 3: *Hemidesmus indicus*

The various activities exhibited by *Hemidesmus indicus* include antimicrobial, antifungal, anti-acne, anti-inflammatory, and anti-enterobacterial properties. It is also rich in flavonoids and nutrients like copper, iron, manganese, vitamins A and D, and zinc, making it beneficial for the skin around the eyes and an effective ingredient for anti-aging purposes. The inhibition of melanin generation allows for the prevention and control of pigmentation issues such as age spots, sun tanning, and freckles. Formulations containing *Hemidesmus indicus* roots, along with other ingredients, have shown efficacy in inhibiting elastase, collagenase, and tyrosinase activities, thereby preventing and improving skin aging, pigmentation, and other related concerns.

Polyherbal formulations incorporating *Hemidesmus indicus* offer multiple therapeutic benefits, including promoting healthy skin, serving as an anti-acne and antimicrobial agent, providing antioxidant and immune-modulating effects, acting as an anti-inflammatory agent, cleanser, and skin brightener, as well as offering protection against UV radiation from the sun. The smoothening properties of sarsaparilla contribute to the elimination of dry and itchy skin. *Hemidesmus indicus* also possesses natural antioxidants that help protect the skin from environmental stressors. The application of cosmetic formulations containing *Hemidesmus indicus* leads to antioxidant effects, improving the appearance and health of the skin by reducing wrinkles, minimizing the appearance of age spots, and enhancing skin elasticity and luster.[12]

FORMULATION AND EVALUATION OF POLYHERBAL DIGESTIVE CHURNA

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Abstract

In the recent years, the use of ayurvedic and herbal drugs has been increased all over the world due to their huge therapeutic effect and less adverse effects as compared to other medicines. The rising use of these drug by the human is forcing the driving force to evaluate the health claim of these agents and to develop standards of quality, purity, safety and efficacy of the drug. Mostly these drugs are effective but due to adulteration and lack of standardization, the effectiveness of the drug is decreased. So, there is need of development of standardization parameters. In the standardization of the herbal drug the physical, chemical, biological, analytical parameters are carried out. It assures the quality, purity and safety of drug. This project deals with the preparation and evaluation of an Ayurvedic formulation - Polyherbal Digestive Churna by carrying out a detailed analysis based on WHO and FDA guidelines.

Digestive Churnas are commonly used in Ayurveda for the treatment of Adhmana, Sula, Gulma, Pandu, Parsvasula, Vastisula, Trikasula, Yonisula, Gudasula, Vibandha, Mutrasanga, Kanthabandha, Hrtroga, Aruci, Pliharoga, Hikka, Svasa, Kasa and Agnimandya. Simply issues dealing with digestion and lack of appetite.

The preparation of Churna was done as per Indian Ayurvedic Pharmacopoeia. Ensuring the best particle distribution. The physio-chemical parameters like Flow property, Carr's Index, Hausner's Ratio, Angle of Repose, Moisture content, Total ash, Acid insoluble ash, Water soluble ash, Water soluble extractives, Alcohol soluble extractives, Ether soluble extractives, pH of water extract, Fluorescence analysis and digestive property studies like Antacid property studies were taken which contribute to a great extent for standardization. The shelf-life period of the formulation was also studied.

Keywords: Churna, Peppermint, Dill seeds, Aromatic Ginger, Java Grass, Polyherbal.

INTRODUCTION

Countries like India and China have been using plants as medicine for thousands of years. The majority of developing nations continue to use the native/traditional healthcare system, according to the WHO. Nowadays, traditional Chinese medicine is becoming more and more reputable in various parts of the world. Alternative medicine practices include Ayurveda and Unani in industrialized nations. The herbal remedies, which were once viewed as superstitious and irrational, are now becoming well-liked alternatives to and even supplements to modern medications. The WHO encourages and promotes indigenous medicines because there is an increase in demand for them globally and advises the member nations to reintroduce them into primary healthcare. The market for herbs and herbal products is expanding rapidly. For herbalists, homeopaths, and other practitioners of traditional medicine, there is a sizable global market. These medications are widely offered in pharmacies, grocery stores, etc. By making medicinal plants, spices, and plant extracts available to the food, flavor, fragrance, and cosmetic industries, traders and suppliers of crude drugs expand their market. Currently, the global market is a fast-moving sector for herbal drugs.

Ayurveda, a natural system of medicine, originated in India more than 3,000 years ago. The term Ayurveda is derived from the Sanskrit words Ayur meaning life and Veda meaning science or knowledge. Thus, Ayurveda translates to knowledge of life. Ayurveda is one of the popularly applied health resources across the globe. Standard terminology of Ayurveda is an essential tool for working on other standards, guidelines, classifications, and regulations, as well as integrating Ayurveda into health systems.

As ayurveda is one of the antient method of health development they also have different types of formulations some of them includes

1. Ark (Distillation of Herbs)

These are prepared by distillation of herbs; they are extremely light in nature and very easily enter in the system.

Examples-Gulab Ark, Ajwain Ark

2. Asava & Arishta (Natural Fermented Liquid Medicines)

These are prepared in the form of herbal juices or their decoctions to undergo fermentation with the addition of sugar. There is a big difference between arishtas and asavas. The arishtas are prepared by decoction of herbs in water while asavas are prepared by maceration of herbal drugs in jaggery or sugar.

Examples-Arjunarishta, Ashokarishta, Kumaryasava.

3. Avaleha (Paste like Products)

It is a semisolid preparation of herbs prepared with addition of Jaggery, juices and decoction.

Examples- Chavanprash, Drakshavaleha

4. Bhasma (Purified Calcinations)

They are very fine ayurvedic medicinal powders which are prepared by Incineration. The incineration is a process of heating metals, minerals, etc. on a high temperature to convert them to their Bhasma

Examples- Abhraka bhasma, Godanti bhasma, Swaran bhasma,

5. Churna (Powders)

These are generally raw herbs which are dried and finally powdered and then passed through different sieves to prepare fine powder and then mixed with other appropriate ingredients.

Examples- Shatavaryadi Churna, Sitopaladi Churna

6. Ghrita (Medicated Clarified Butters)

This process involves that cow's milk is churned to obtain butter, which is heated at a temperature to obtain ghee This ghee is then processed with medicinal herbs to produce Ghrita

Examples Amrit ghrit, latyadi ghrit, Brahmi ghrit

7. Kwatha / Kashaya (Decoctions)

It is made from decoction of herbs by boiling herbs in water.

Examples-Drakshadi kwatha, Caturbhadra kwatha

8. Pak (Herbal Granules)

It is also paste like preparation but it is slightly thick then avaleh.

Examples-Musli Pak, Supari Pak

9. Ras / Rasayan (Herbal Mineral Medicines)

These are mineral based medicines which are purified under the different purification process (known as Sanskara, Shodhan) that removes harmful substances or impurities which may cause toxic effect or disease in body.

Examples - Swarna Soot Shekhar Ras, Vat vidhwansan Ras

10. Taila (Medicated Oils)

These are medicated all which are extracted from seeds of single herb and then are processed with other herbs to make medicated oils.

Examples-Anu taila, Balaguduchyadi taila

11. Vati / Gutika (Pills / Tablets)

These are prepared from one or more plants or minerals in the form of tablets.

Examples-Kutajghan vati [5,6]

CHURNA

In ayurveda, any combination of powdered or mixed herbs and/or minerals used for the treatment for illness or any pathological condition is referred to as a "Churna." Specific ingredients are cleaned correctly, dried completely, ground, and sieved to make churna. If correctly stored in an airtight container, the resulting powder will maintain its potency for up to a year.[1,3,5,11]

Types of Churna

Based on Particle size

a. Sthoola Churna: Coarse powder.
b. Sookshma Churna: Fine powder.
c. Atyanta Sookshma Churna: Very fine powder.

Types based on ingredients

Types of Churna based on number and nature of ingredients:

a. Single herb powders
b. Poly herbal powders
c. Metallic powders (Loha Bhasma)

Advantages

i. Churna is more stable than other ayurvedic liquid dosage form.
ii. The chance of incompatibility is less as compared to liquid dosage form.
iii. Due to smaller particle size of powder, it gets dissolved easily in body fluids.
iv. Small children or elderly patient can easily take the powdered drug as such or dispersed in water or any other liquid.
v. Powders are more economical as compared with other dosage form because not required any special machinery or technique.
vi. Powders are easier to carry than the liquid dosage form.[22]

Disadvantages

i. Drugs having bitter, nauseous and unpleasant taste cannot be dispensed as churna.
ii. Deliquescent & hygroscopic drugs cannot be dispensed as churna.
iii. Churna which get affected by atmospheric conditions are not suitable for dispensing in powder forms.
iv. The dispensing of Churna is a time consuming.
v. Dose accuracy is not guaranteed. [22]

Churna in digestive property Enhancement

Digestion can be enhanced either by increasing the amount of gastric acid or by increasing the amount bile acids. Churna as such a mixture of herbs which increases either of this and increases the digestion in the body. Some common churna which are used for digestion includes

a. Triphala churna
b. Avipattikar churna
c. Uttam churna
d. Kayam churna
e. Ajwain pachak churna
f. Hinguvakadi churna

Plants

The plants selected for the preparation of our churna were all traditionally used ones or used as local remedies. The used includes

a. Seeds of Dill
b. Rhizomes of Java grass
c. Rhizomes of Aromatic Ginger
d. Shoots and leaves of Peppermint

All of them are traditionally used plants for the purpose of increasing human appetite and for increasing the digestive property. They have unique activities which all leads to the improvement of digestive health in human body. In addition to these plants, herbal plant product namely palm candy has been used in the formulation of churna. This actively increases the taste of the churna along with its antioxidant activity, reduces the chances of diabetic ulcers and colon cancers.

AIM

The aim of this project is to formulate Herbal Churna meant for digestive property by following standard procedures and evaluate the formulated churna by organoleptic, microscopic, physical, chemical and analytical methods

OBJECTIVE

Most of the traditional systems of medicines are effective, but they need herbal drug evaluation for the purpose of standardization of herbal formulation, a profound knowledge of the important herbs found in India are widely used in ayurvedic formulations. [1] But due to the lack of standardization parameters, Ayurvedic preparation like churna is not getting enough support and hence the development of new such formulations are limited. The objective of the project is to Create a revolution in the field of herbal drugs by the introduction of a new churna and providing enough basic testing parameters and setting up an example for the future generation.

PLANT PROFILING

Dill Seeds

Biological Source: Dill consists of the dried ripe fruits of *Anethum graveolens* Linn., belonging to family *Umbelliferae*

Common Uses: It is used as an ingredient in gripe water, given to relieve colic pain in babies and flatulence in young children. The seed is aromatic, carminative, mildly diuretic, stimulant and stomachic. The essential oil in the seed relieves intestinal spasms and griping, helping to settle colic. The carminative volatile oil improves appetite, relieves gas and aids digestion. Chewing the seeds improves bad breath. Anethum stimulates milk flow in lactating mothers, and is often given to cattle for this reason. It also cures urinary complaints, piles and mental disorders.[19]

Domain	:	Eukarya
Kingdom	:	Plantae
Phylum	:	Anthophyta
Class	:	Magnoliopsida (dicot)
Order	:	Apiales
Family	:	*Umbelliferae*
Genus	:	*Anethum*
Species	:	*graveolens*

Java Grass

Biological Source: They are dried rhizomes of *Cyperus rotundus* belonging to family *Cyperaceae*

Common Uses: Aromatic ginger has a longstanding use in the Indian traditional medicine as an antimicrobial, anticancer, anti-inflammatory, wound healing, and anti-influenza agent and for curing skin, pain, rheumatic, digestive and respiratory, scientific study also reveals its activity in atherosclerosis, aging, apoptosis, cancer, cystitis, epilepsy, hirsutism, nociception, prostatitis, and genotoxicity disorders.[20]

Domain	:	Eukarya
Kingdom	:	Plantae
Phylum	:	Tracheophyta
Class	:	Liliopsida
Order	:	Poales
Family	:	Cyperaceae
Genus	:	*Cypreus*
Species	:	*rotundus*

Aromatic Ginger

Biological Source: Aromatic ginger or Chandramulika or Karchoor or sugandhvacha, are rhizomes of *Kaempferia galanga L* medicinal plant belongs to *Zingiberaceae* family.

Common Uses: This plant is widely used in folk remedies and traditional medicine for treatment of digestive disorders and nervous system actions because of its antitumor and antimicrobial properties, chemo preventive potential, its renal actions, antiallergenic effects, and also for lessening cramping, digestive complaints, anorexia, nausea and diarrhoea [18]

Domain	:	Eukarya
Kingdom	:	Plantae
Phylum	:	Tracheophyta
Class	:	Liliopsida
Order	:	Zingiberales
Family	:	Zingiberaceae
Genus	:	*Kaempferia*
Species	:	*galanga*

Peppermint

Biological Source: Mint consists of the dried leaves and flowering tops of *Mentha piperita* L. (peppermint) belonging to the family *Lamiaceae*.

Common Uses: Mint has been linked to physiological benefits such as reducing blood sugar; analgesic property; cures loose motion, indigestion, gastric issues, and irritation bowel syndrome; gives relief from respiratory problems; has wound healing activity and is good for breastfeeding.[23]

Domain	:	Eukarya
Kingdom	:	Plantae
Phylum	:	Angiospermophyta
Class	:	Magnoliopsida
Order	:	Lamiales
Family	:	Lamiaceae
Genus	:	*Mentha*
Species	:	*piperita*

Palm Candy

Biological Source: Palm Candy is a plant product Obtained by processing of sap of the plants of *arecaceae* family.

Common uses: Used in medicines as a sweet base and is also added to preparations made for infants and young children, used for sore throat,

used to treat dry cough and cold.