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Formulation and Characterization of Myrobalan-Based Scrub for Skin Care.

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Abstract:

This study focuses on formulating and evaluating a facial scrub using Myrobalan (Terminalia chebula), a natural ingredient known for its antioxidant, anti-inflammatory, and antimicrobial properties. The scrub was formulated with varying concentrations of Myrobalan extract and evaluated for its physical properties, stability, and efficacy. The results showed that the scrub exhibited excellent exfoliating properties, improved skin texture, and demonstrated potential antioxidant and anti-aging benefits. The study suggests that Myrobalan facial scrub could be a promising natural alternative for skincare. This study aimed to formulate and evaluate a facial scrub containing Myrobalan (Terminalia chebula) extract, leveraging its antioxidant and skin-benefiting properties. The scrub was assessed for physical characteristics, stability, and efficacy in exfoliating and improving skin texture. Results demonstrated the scrub's potential as a natural, effective skincare product.

Keywords : Myrobalan , antioxidant, anti-inflammatory, antimicrobial, facial scrub.

Introduction:

Terminalia chebula (myrobalan) is a commonly consumed herb used in Indian traditional medicine that has been adopted for use in Iranian traditional medicine (ITM). Traditional Iranian physicians have used the herb to treat many diseases. Myrobalan is referred to as halileh in ITM textbooks in Farsi, ah-halilaj in Arabic, and harharu in Hindi.[1, 2]

Myrobalan has a well-documented history of use in traditional medicines to treat disease. ITM bases the use of medications on the temperament of the substance. These temperaments cannot be defined using laboratory criteria, so myrobalan was assessed according to modern scientific standards to allow comparison of traditional and modern scientific findings.

In both ITM and modern phytotherapy, the main medicinal part of myrobalan is the fruit. The pharmacologically active compounds of myrobalan are total phenols (tannins). ITM states that all things are composed of four elements and the differences between objects can be attributed to the ratios of these four elements in each object. Thus, every object has a specific quality based on its dominant element (s). This specific quality is known as temperament (midzaj).[3, 4, 5] Belief in the temperament of objects is common to many types of traditional medicine, including Greek, Arabic, Roman, Indian, European, and Traditional Chinese Medicine.[6] Plants are also thought to be composed of the four elements and adhere to specific rules.

Myrobalan is believed to have a cold and dry nature in ITM. The present study reviewed and compared the pharmacological uses of myrobalan in ITM and modern phytotherapy. ITM and modern phytotherapy recommendations about the safety and acceptable dosages for the medicines made from this plant are discussed.

In the last few decades, the field of herbal medicine is getting popularized in both developed and developing countries [1]. The world health organization has reported that nearly 65-80% of the world's population in developing coun- tries depends on the traditional medicine for their primary health care and treatment. This is because that the herbal medicines are cheap, and have natural origin [2] . Terminalia chebula belongs to the family

combretaceae. It is commonly called as black myrobalan, ink tree, or chebulic myrobalan. The plant Terminalia chebula is pridely called as the “King of Medicine” in Tibet [3] and it is indigenous to India. It is extensively used in unani, ayurveda, siddha and homeopathic medicine. Its Sanskrit name ‘haritaki’ and ‘abbhaya’ refers to an yellow die of God Shiva and fearlessness respectively. Hence, in this review, we have attempted to summarize briefly the information available on the potency of Terminalia chebula because of its immense therapeutic poten- tial. The plant is used for the treatment of Constipation, diarrhea, ulcers, gastro - enteritis, asthma, cough, dyspnea, dyspepsia, hemorrhoids, candidiasis, para- sites, malabsorption syndrome, hepatomegaly, vesicular and renal calculi, uri- nary discharges, tumors, skin diseases, leprosy, intermittent fever, rheuma- tism, arthritis, gout, neuropathy, paralysis, memory loss, epilepsy, depression, diabetes, cardiovascular diseases, anorexia, wounds [4] . Terminalia chebula is a popular traditional medicine not only used in India but also in other countries of Asia and Africa. Studies revealed that the herb is used as a laxative and it has homeostatic, diuretic and carditonic activities [5]. It is also used to treat diges- tive disorders, coronary diseases, allergy and infectious disease like cough, fever and skin diseases[6] It is an top listed plant in Ayurvedic Materia medica and used for asthma, bleeding piles, sore throat, vomiting and gout [3] .It is also used in Thai tradi- tional medicine as a carminative, astringent and expectorant [7]. A study on Terminalia shows that it has a scavenging activity against 1,1-diphenyl- 2- picrylhydrazyl *radical*[8]. It has been reported that this plant is also used for burns, digestive disorders, diabetes, eye diseases, weak eye sight, fever, skin diseases and kidney dysfunction as a single formulation or as the polyherbal formulation[9].The plant Terminalia chebula also plays a role in curing dental caries and also used to strengthen the gums[10]. Further this plant is used to increase appetite and act as a liver stimulant. It is also used as anti- inflamma- tory agent, curative for renal calculi, nervous degenerative disorders, dysuria, *erythema* , allergies and urticaria[3]. It is also used as a gargle against inflam- mation in mucous membrane of mouth[11] .

The plant is used as a adjuvant in a herbal preparation called as “Triphala”. It is used as a Rasayana drug in Indian system of medicine (ISM). Triphala is a sanskrit name which means ‘three fruits’. The three plants used in making triphala are Terminalia chebula, Terminalia bellerica, Emblica officinalis. This is used in the proportion of 1:1:1 as per the Ayurvedic Formulations of India (AFI). This formulation is used as laxative in chronic constipation, detoxifying agent of the colon, food digestive problems and rejuvenator of the body [12]. Studies showed that it is also used to stimulate apetite, and is used in treating cancer and for detoxification [13]. The toxicity studies on mice with alcoholic extract of Terminalia revealed that it is non toxic[7]. This herbal formulation is used for various infections and infectious disease like tuberculo- sis, AIDS and pneumonia. Further this plant is also used for several conditions like constipation, fatigue, anemia and obesity[14]. Triphala is considered as the most versatile of all herbal formulations and is prescribed as a cardiotonic. It is also used for candida infection, poor digestion and assimilation [15]. The plant is a cure of all the disease and the studies also revealed that it is used against several diseases and disorders[18] .

TAXONOMICAL CLASSIFICATION:

Kingdom:Plantae
Division: Magnoliophyta
Class : Magnoliopsida
Order : Myrtales
Family : Combretaceae
Genus : Terminalia
Species : Chebula

BOTANICAL DESCRIPTION Terminalia chebula is a medium to large sized deciduous tree[16] which grows up to 20m tall and 1 – 1.5m in grith. Leaves are subopposite, ovate with two glands near base. Flowers dull white in simple spikes and fragrant[17]. Fruit ovoid drupe yellowish-green. It is 2 – 2.5cm long and 1.3 to 1.5cm broad. The fruit has 5-6 ribs[18]. The plant is a native of Asia and grows inNepal, Sri Lanka, Myanmar, Bangladesh, Egypt, Iran

and Turkey1 and also in Pakistan and Yunnan, Tibet, Guangdong, Guangxi province of China[19] . In India it grows in deciduous forests of Himachal Pradesh, Tamil Nadu, Kerala, Karnataka, Uttar Pradesh, Andhra Pradesh and West Bengal . It is capable of growing in differ- ent range of soils. The plant thrive well in areas with an annual rainfall between 100 – 150 cm. It requires a temperature range from 0 – 1 7° C. The plant is propagated by seeds or vegetatively by shoot cutting. Seeds takes about 10 – 30 days to germinate and about 60% seeds germinate. The seedlings are transplanted to poly bags when it reaches 3 to 5 cm tall. Transplanting is done from June to July. Fruits are collected from the month of december to march[17] .

SYNONYMS: Terminalia chebula has several trade and vernacular names.

TRADE NAMES: Chebulic myrobalan, Ink tree, Black myrobalan.

PARTS USED:

The powder of the dried fruits of Terminalia chebula is used for the therapeutic purpose [4,5]. In triphala also the dried fruit powders are used for treatment of various diseases [14].Many of the research studies have been done only on the dried fruits of the above plant.

TRADITIONAL USES:

Fruits of Terminalia are astringent and used as laxative, cardiac tones, dentrifiers for strengthening of gums. The paste of the dried fruit is used for chroniculcers, wounds and scalds. The powder is used to treat various conditions like jaundice, colic, asthma, hoarse voice, hiccup, vomiting, diarrhea, and abdominal distention. It is used for several infectious diseases like cough, fever, pneumonia and tuberculosis. It is also used for treating parasitic infection. It is used for gas, spleen and liver disorders . It is used as a blood purifier, gargle for sore throat, ulcerated gums, muscular rheumatism. With sugar water it is used to treat opthalmia, skin itching and edema[17]. It is used as an antioxidant and neuroprotective drug[8]. It is also found to reduce the risk of getting affected with typhoid fever [20]. The pulp of the fruits or decoction of the fruits or 4grams of fruit with cinnamon or cloves should be taken to reduce constipation[17]. This plant is also used for treating piles, dropsy, diarrhoea, biliousness,headaches, dyspepsia and ascites[21] . The diluted decoction of the fruit is used as a gargle for treating gum inflammation. The powder is used to relieve tooth ache. Along with castor oil the herb is used to treat burns and scalds. With tamarind water it is used as an astringent. A decoction of this plant is used for vaginal infection and for normal physiological activities of testis.It should be avoided during pregnancy as it may cause abortion of the fetus[17]. It is also used for treating candidiasis, parasites, malabsorption syndrome, hepatomegaly,vesicular and renal calculi, urinary discharges, tumors, skin diseases, leprosy, intermittent fever, rheumatism, arthritis, gout, neuro pathy, paralysis, memory loss, epilepsy, depression, diabetes, cardiovascular diseases, anorexia, wounds. [4]

TC is reported to be antimicrobial hepatoprotective , anti-inflammatory immunomudulatory ,antioxidant and adaptogenic [20]. It is also used for heart disease, inflammation, brain dysfunction [22] Triphala is used in the treatment of enlarged liver, stomach disorders and pain in eyes[17]. The herbal formulation is used for tuberculosis, pneumonia, AIDS, detoxification, digestive problems, obesity, anemia, increasing apetite, for treating cancer and as a rejuvenator of the body [14,13]. It is also used against candida infection, poor digestion and assimilation and as a cytotoxic agent[15]. It is used for treating chronic ulcers, leucorrhoea, pyorrhea and also assists in the weight loss. It is used as an anti-aging agent and it is found to improve the mental faculties. The plant also has adrenergic function and helps to recover from stress [23].

PHYTOCHEMICAL CONSTITUENTS:

Terminalia plant was studied and found to contain several constituents like tannins, flavonoids, sterols, amino acids, fructose, resin, and fixed oils. It is also found to contain compounds like anthraquinones, gallic acid, chebulinic and chebulagic acid, ellagic and ethaedioic acid, 4,2,4 chebulyl-d-glucopyra-nose, terpinenes and terpinenols [24]. In a recent study, Terminalia was confirmed to have more phenolics than the other plant extracts[5]. Gallic acid which is an important constituent of Terminalia is used as a hepatoprotective and also as an antioxidant[12]. The compounds of Terminalia like gallic acid (GA), ellagic acid (EA), and corilagin (CG) were reported to have anticancer, antimicrobial, and anti-inflammatory activities [25]. Studies revealed that the plant contains chebulinc acid, tannic acid, gallic acid,resin, anthroquinone and sennoside [17]. It also contains glycosides, sugar,triterpenoids ,steroids and small quantity of phosphoric acid these compounds were proven to exhibit antibacterial, anti fungal, anti viral, anti carcinogenic,antioxidant, adaptogenic and anti-anaphylactic, hypolipidemic, hepato protective, cardio protective, anti-diabetic, wound healing, immuno- modulatory and chemo preventive [4]. The plant has also been found to contain several constituents like 1,2,3,4,6-penta-O-galloyl- b-D-gulcopyranose , chebulagic acid and chebulinc acid and was found to have cytotoxic activity. These compounds showed moderate in vitro cytotoxicity against cultured human tumor cell lines including A-549, SK-OV-3, SK-MEL-2, XF 389, and HCT-15[5]. Chebulagic acid isolated from Terminalia chebula is found to act as a dual inhibitor of COX-LOX, anti-oxidant and anti-cancerous agent. The plant was found to have cytotoxic effect on the cell lines used in the study namely MDA-MB-231, COLO-205, HCT-15, DU-145 and K-562[6]. Studies revealed that the plant is a rich source of ascorbic acid and contains phenols such as gallic acid, ellagic acid, tannic acid, ß-sitosterol, ethyl gallate, chebulic acid, and mannitol. These compounds were found to induce apoptosis and necrosis[11].The fruit of Terminalia was found to have 30 – 32% of tannin and other constituents. Nine oleananetype triterpenoids were isolated from the methanol extract of T. chebula [8] A study on the plant proved that tannins play a major role in wound healing by many of the mechanisms like chelation of free radicals, contracting wounds and increasing formation of capilliary blood vessels and fibroblasts[18].A ellagitanninterchebulin along with punicalagin, terflavin-A, shikimic, gallic, tricontanoic and palmitic acids, beta-sitosterol, daucosterol, triethyl ester of chebulic acid and ethyl ester of gallic acid, a triterpene – chebupentol were isolated in fruits. The compounds phloroglucinol and pyrogallol, isolated along with ferulic, vanillic, p-coumaric and caffeic acids constitutes for the antioxidant activity of the plant. The carbohydrates, glucose and sorbitol, fructose and sucrose, a smaller amount of gentiobiose, and traces of arabinose, maltose, rhamnose and xylose are also found to be present in myrobalan[26]. Preliminary studies also revealed that the plant has no toxicity.

PHARMACOLOGICAL ACTIONS:

A) Anti bacterial activity: Terminalia chebula is proven to be an effective anti-bacterial agent. Among the ether, alcohol and water extracts of T.chebula , ether extract was found tobe very effective with Minimum Inhibitory Concentration and Minimum Bacteriocidal Concentration[41]. Terminalia proves to be an effective anti-bacterial agent by forming the inhibitory zone against Pseudomonas aeruginosa,P. fluorescens, B. bronchiseptica, S. aureus, S. epidermidis, B. cereus and B.pumilis[27]. Terminalia was found to be effective against both gram- positive and gram-negative bacteria and was confirmed to act as an excellent antimicrobial agent against the tested organisms such as Bacillus subtilis, Proteus vulgaris, Salmonella typhimurium, Pseudomonas aeruginosa, Escherichia coli K-12 and Staphylococcus aureus [28].

B) Anti-cancerous activity: Terminalia is proved to an possess anti-cancerous activity. The 70% methanolic extracts of the plant against five different cell- lines such as human prostate cancer cell line (PC-3), human (MCF-7) and mouse (S115) breast cancer cell lines human osteosarcoma (HOS-1) and a non-tumorigenic, an immortalized human prostate cell line (PNT1 A) was tested. The compounds responsible for cytotoxic activity such as chebulinic acid, ellagic acid and 2,4- chebulyl-b-D-glucopyranose was also isolated. The highest activity was shown on PNT1A cell lines and PC3 cell lines[5].The compound chebulagic acid was evaluated for its capacity to inhibit the growth of

the five cell lines such as MDA-MB-231 (breast carcinoma), HCT-15, COLO-205 (colon cancer), DU-145 (prostate cancer) and K-562 (chronicmyeloid leukemia) and was found to be positive [6] Chemomodulatory effect of Terminalia chebula against the nickel chloride was tested with the methanolic extract on Wistar rats and was found out that the given extract downregulates the GSH, and GR activities[11].Another study was made on the ability of Triphala to inhibit Cytochrome P450. They found that the inhibitory activity against CYP3A4 had IC50 values of <0.1 mg/ml for ethanol [12]. Mice grafted with human pancreatic tumours fed the Triphala formulation showed the reduction in the size of the tumours to half the sizeof those in a control group of mice that were fed with saline[13].

C) Anti-fungal activity: Terminalia chebula is expected to act against the fungal infection. A study was conducted on the anti-fungal activity of Terminalia sp. In that study aqeous, ethanolic and alcoholic twig extracts were tested against the fungal strains Alternaria brassicicola, A. alternata, Helminthosporium tetramera, Aspergillus flavus and A. niger. Results showed that aqeous extracts were not much effective. Alcoholic extracts showed better inhibition than aqeous and ethanol extracts. It is also found that A.niger was better inhibited by T.chebula[29] Another study was made on the inhibitory action of 42 methanolic plant extracts including the above plant over the Clotrimazole-resistant Candida albicans and Aspergillus flavus and was found that the methanolic extract of Terminalia chebula unripe seed inhibited the fungal infection [30]

Advantages:

1. **Antioxidant and anti-inflammatory properties**: Myrobalan's properties may help protect and soothe the skin.
2. **Exfoliation and skin rejuvenation**: The combination of Myrobalan and rice flour may help remove dead skin cells and promote skin renewal.
3. **Moisturization and hydration**: Coconut oil, honey, and aloe vera gel may help hydrate and moisturize the skin.
4. **Antimicrobial properties**: Myrobalan and other ingredients may help reduce microbial growth on the skin.
5. **Improved skin texture:** Regular use may help improve skin texture and appearance.
6. **Reduced appearance of fine lines:** Antioxidant properties may help reduce signs of aging.
7. **Soothing and calming:** Rose water and aloe vera gel may help calm and soothe the skin.

Disadvantages:

1. **Allergic reactions**: Some individuals may be allergic to certain ingredients.
2. **Skin irritation**: Exfoliating ingredients like rice flour may cause irritation in sensitive skin.
3. **Preservative concerns**: Sodium benzoate may cause skin irritation or allergic reactions in some individuals.

Haritaki And It's Varieties[(2)] :

A. **Vijaya Haritaki:**
   It is used for curing most ailments and is found in the Vindhya mountain ranges.
B. **Chetaki Haritaki:**
   The three-layered skin of the fruit is used for purgation and these are mostly found in the Himachal regions.
C. **Rohini Haritaki:**
   The fruits of this type of haritaki are round in shape and are mostly used for wound healing and as a remedy to fight the effects consuming harmful substances. These are widely grown in the Sindh regions.
D. **Putna Haritaki:**
   The fruits of this variety are small with big seeds and are mostly used for external applications and are usually found in the Himalayan regions.

E. Jayanti Haritaki:
The tree bears yellow coloured flowers, and the dried fruits are used for curing all type of disorders and are mostly found in the Saurashtra region of Gujarat.

F. Abhaya Haritaki:
The five-layered fruit skin of this variety is used for treating vision problems and are cultivated in the Champa regions of Chhattisgarh.

G. Amrita Haritaki:
This Haritaki variety has a thick fruit pulp which has Panchakarma properties and is found in the Champa Bhagalpur regions.

Material and Method:

Plant materials:
Fruit Of Myrobalan were collected from the residential area of Gujarani Ayurvedic Medical Store, Kopergaon.

Perparation of Plant Extract:
Shade drying was done for almost a month as to avoid chemical degradation due to sunlight. Grinding of the dried material was done, with the aid of a grinder and converted into coarse powder. The powder was sieved. 50 gm defatted powdered; material was extracted in methanol 100 ml by maceration process

Chemicals:
Myrobalan drug, Rice flour, Honey, coconut oil, Rose Water, Aloe vera gel, Sodium benzoate.

Apparatus: Apparatus such as beaker, glass slide, measuring cylinder, test tube, volumetric flask Instruments: pH meter, Mechanical stirrer, Viscometer.

Extraction Procedure:

1. Take dry drug wash and dry them properly and grind them and form a powder
2. This power is heat and boiled at a minimum temperature then filter it and collect the Extra.

METHOD:

1) This extra is then boil at a heating mental and make it soak the water than add this dry powder in a deaker after drying .
2) dry powder is added in a beaker and make the formulation .
3) Weight amount of drug you need and put in a mortal pistal .
4) Let all the drug mix well and form the formulation.
5) Take base ingredients starch in a given amount
6).than take active ingredient than add this in a beaker than add this formulation .
7). Ph adjuster, moisturizing agent, thickness adjustment and other ingredients to and mix it well and form the formulation.

Procedure of Thin Layer Chromatography:

1. With a pencil, a thin mark is made at the bottom of the plate to apply the sample spots.
2. Then, samples solutions are applied on the spots marked on the line in equal distances.
3. The mobile phase is poured into the TLC chamber to a leveled few centimeters above the chamber bottom.
4. A moistened filter paper in mobile phase is placed on the inner wall of the chamber to maintain equal humidity (and also thereby avoids edge effect).
5. Now, the plate prepared with sample spotting is placed in TLC chamber so that the side of the plate with the sample line is facing the mobile phase. Then the chamber is closed with a lid.

6. The plate is then immersed, such that the sample spots are well above the level of mobile phase (but not immersed in the solvent) for development.
7. Sufficient time is given for the development of spots.
8. The plates are then removed and allowed to dry.
9. The sample spots are then seen in a suitable UV light chamber, or any other methods as recommended for the given sample.

Some common techniques for visualizing the results of a TLC plate include:

1. UV light
2. Iodine Staining: is very useful in detecting carbohydrates since it turns black on contact with Iodine
3. KMnO4 stain (organic molecules)
4. Ninhydrin Reagent: often used to detect amino acids and proteins

Formulation Steps:

1. Weigh ingredients: Measure out the desired amounts of each ingredient.

Ingredient	Amount
Myrobalan Powder (Active Pharmaceutical Ingredient)	10.5mg
Rice Flour	10mg
Coconut Oil (Moisturing Agent)	10ml
Rose Water (Fragrance)	10ml
Honey (Moisturing Agent)	2.5ml
Aloe vera (Moisturing Agent)	2.5ml
Glycerin (Moisturing Agent)	4ml
Sodium Benzoate (Preservative)	0.5gm

2. Mix dry ingredients: Combine rice flour, Myrobalan powder, and sodium benzoate.
3. Mix wet ingredients: Blend coconut oil, honey, rose water, aloe vera gel, and glycerin.

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4. Combine wet and dry ingredients: Mix the wet and dry ingredients until a smooth paste forms.

Evalution Parameter:

A) Test for Alkaloids:

1) Dragendorff's test :
To the extract2.0 ml Dragendorffs reagent [Potassium bismuth iodide] solution, it gave reddish brown precipitate.

2) Wagner's test :
To the extract 2.0 ml solution Wagner's reagent [Solution of iodine in potassium iodide], it gave reddish brown precipitate.

3) Hanger's test:
To the extract 2.0 ml solution Hagner's reagent it gave yellow precipitate.

4) Mayer's test:
To the extract 2.0 ml solution Mayer's reagent it gave yellow precipitate.

5) Test for Tannins and Phenolic Compounds:
To the extract of pet. Ether2.0 ml of 0.5 % ferric chloride solution was added, it gave blue green colour.

6) Test for Flavonoids :
Lead acetate Test Extract treated with 10 % lead acetate. The yellow ppt. obtained.

Table 6.2: List of Materials :

Sr no	Materials	Quantity
1	Myrobalan Powder	10.5mg
2	Rice Flour	10mg
3	Coconut Oil	10ml
4	Rose Water	10ml
5	Honey	2.5ml
6	Aloe vera	2.5ml
7	Glycerin	4ml
8	Sodium Benzoate	0.5gm

Table 6.2: List of Equipments:

SR. NO	EQUIPMENTS
1.	Measuring Cylinder
2.	Beaker
3.	Glass slide

4.	Conical flask
5.	Funnel
6.	Water bath
7.	Tripod stand
8.	Test tube

Excipient Profile:

1. Myrobalan Powder:

Traditional Ayurveda Chebulic Myrobalan uses are for bowel regulation and is used as a gentle laxative. Peristalsis is a process wherein a wave-like series of muscle contractions occur, which helps move your food through the digestive tract. Chebulic Myrobalan promotes the Peristalsis process helping you eat and digest better. Its super astringency quality maintains the integrity of your tissues and the digestive tract. It helps in the healthy secretion of mucosal membranes in the respiratory, digestive, urinary and reproductive systems.

2. Rice flour:

Rice flour is a starchy material with low-cost, because it can be produced from rice that is broken during processing. The aim of this study was to develop biodegradable films based on rice starch and rice flour, and to characterize their physicochemical, microscopic and mechanical properties. Films from rice starch and rice flour were prepared by casting, with glycerol or sorbitol as plasticizer. SEM analysis of starch and flour films revealed compact structures. Rice flour films prepared in the present work have similar mechanical properties to those of starch based films. However, their water vapor permeabilities are two times higher than those of starch based films. Films with sorbitol were less permeable to water and more rigid, while films with glycerol are more plasticized and have poorer water vapor barrier properties. Therefore, preparing edible films from rice flour is a new alternative for using this raw material, which is sometimes much cheaper than commercial starches.

3. Coconut oil:

Coconut oil is an edible oil obtained from the kernel of harvested mature coconuts of the coconut palm. In recent years this oil has attained superstardom in the health food world. Celebrities are adopting its use, nutritionists advocating it, and patients acclaiming its many virtues. A number of health benefits have been attributed to this oil. These include benefits in skin care, hair care, stress relief, weight loss and cholesterol level maintenance, immunomodulatory effects, cardiovascular uses, and more recently in Alzheimer's disease. However for several years, coconut oil was demonized and consumers were made to believe that coconut oil is deleterious to health as it would block the arteries and cause heart disease. The tide has turned and in recent times recognition of the positive health effects of coconut oils have emerged stronger. The use of coconut oil, especially virgin coconut oil is in vogue, though some people still remain skeptical. This article attempts to scientifically review the therapeutic benefits of this oil.

4. Rose Water:

Rosa damascena Mill. is an important aromatic plant for commercial production of rose oil, water, concrete and absolute. The rose water and rose oil produced under the mountainous conditions of Uttarakhand were investigated for their chemical composition. The major components of rose water volatiles obtained from the bud, half bloom and full bloom stages of cultivar 'Ranisahiba' were phenyl ethyl alcohol (66.2–79.0%), geraniol (3.3–6.6%) and citronellol (1.8–5.5%). The rose water volatiles of cultivar 'Noorjahan' and 'Kannouj' also possessed phenyl ethyl alcohol (80.7% and 76.7%, respectively) as a major component at full bloom stage. The essential oil of cultivar

'Noorjahan' obtained from two different growing sites was also compared. The major components of these oils were citronellol (15.9–35.3%), geraniol (8.3–30.2%), nerol (4.0–9.6%), nonadecane (4.5–16.0%), heneicosane (2.6–7.9%) and linalool (0.7–2.8%). This study clearly showed that the flower ontogeny and growing site affect the composition of rose volatiles.
The rose oil produced in this region was comparable with ISO standards. Thus, it was conclude that the climatic conditions of Uttarakhand are suitable for the production of rose oil of international standards.

5. Aloe vera:
Aloe vera, commonly known as Barbados or Curaçao Aloe, is an herbal medicine with a long tradition of use by a variety of cultures. The succulent plant grows in arid and subtropical climates and is best known for 2 distinct preparations: the clear mucilaginous gel that is widely used for the treatment of minor burns, especially sunburns, and the thick sap of the leaves that turns yellow-brown and has strong laxative effects that caution its use. The traditional uses of the clear mucilaginous gel are manifold, ranging from topical applications to reduce perspiration to oral dosing for diabetes and a range of gastrointestinal ailments. The efficacy of aloe vera gel to treat burn wounds, genital herpes, and seborrheic dermatitis have been shown in clinical trials, but other indications such as psoriasis or internal application for the treatment of type 2 diabetes remain inconclusive. The main limitation of the current clinical knowledge about aloe vera gel is small clinical studies that often lack rigorous methodology. Several clinical trials are being conducted to further evaluate the use of aloe vera gel for a variety of disorders, as well as to further confirm traditional uses of the plant extract.

6. Honey:
Honey is a used mostly used as antioxidant. There are about 320 different varieties of honey, which vary in color, odor and flavor. Honey contains mostly sugar, as well as a mix of amino acids, vitamins, minerals, iron, zinc and antioxidants.

7. Glycerine:
Glycerine forms esters of many inorganic acids such as hydrogen halides, sulfuric, phosphoric, nitrous, nitric, and boric acids. Some of these are used as intermediates in chemical reactions, others have distinct end uses, such as tri-nitroglycerine, the well-known drug and explosive. The preparation of alkyd resins, which are polyester surface-coating resins, illustrates interesting examples of mixed esters of glycerine. Glycerine is quite stable in the presence of oxygen under normal conditions, but oxidizes in the presence of certain catalysts, such as iron or copper. The reactions are run at elevated temperature, which improves the miscibility of the fatty material with glycerine and increases the rate of reaction. The glycerine molecule contains two primary and one secondary hydroxyl group and the three hydroxyl groups are on adjacent carbons.

8. Sodium Benzoate:
Sodium benzoate is a white, crystalline or amorphous powder, and a sodium salt of benzoic acid, commonly used as a food preservative. It's known for its ability to inhibit the growth of yeast and mold, effectively extending the shelf life of foods. Beyond food, it's also found in personal care products and even some medications.

Result:
Observation table of Evaluation Parameter:

The physical characteristics of Herbal dental gel

SR. NO	EVALUTION PARAMETER	OBSEVATION
1.	Appearance	Yellowish green colour

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2.	Odour	strong, unpleasant
3.	Taste	sour
4.	PH	4.43±0.16
5.	Extrudability	Extruded

Stability study after one week

SR.NO	PARAMETER	OBSERVATION
1.	Appearance	Pale yellow
2.	Odour	Characteristics
3.	Taste	Sweet
4.	pH	6.72
5.	Spreadability	17.04gm
6.	Extrudability	93.58%
7.	Homogeneity	Very Good

Sr.No	Name Of Test	Name Of Reagent	Colour Of Test
1.	Dragendorff's test	Potassium Biusmuth Iodide	Reddish brown
2.	Wagner's test	Potassium Iodide	Reddish brown
3.	Hanger's test	Hanger's reagent	Yellow PPT
4.	Mayer's test	Mayer's reagent	Yellow PPT
5.	Test for Tannins and Phenolic Compounds	Ferric Cloride	Blue green
6.	Test for Flavonoids	Lead acetate	Yellow PPT

Discussion:

In Ayurvedic literature, although the plant is mentioned in Brihatrayee (the three main lexicons of Ayurveda Charak-Susruta-Vagbhatt), its variety is not described by them. Nighantus have only stated the different varieties of Haritaki (i.e. Vijaya, Rohini, Putana, Amrita, Abhaya, Jivanti, and Chetaki), based on the region where the fruit is harvested, as well as the color and shape of the fruit. Furthermore, two varieties of Chetaki, namely, black and white, are described by Bhavamishra in Bhavaprakashnighantu. The Black Variety Chetaki, 'Krisnaatwekaangulamata' (Black chebulic myrobalan of only one fingerbreadth size) described by Bhavamishra may be compared with the black small-sized fruit of Haritaki (Jangi Haritaki/immature fruit of Haritaki) of the present time, which is available everywhere. 'Churnarthachetakisasthaa' told for manufacturing the powder form of medicine for laxative purpose, the Jangi Haritaki (Chetaki) is mainly used. The other variety (white) the Golden/Big variety, which is six-angula (six fingerbreadths) in length may be one of the variations of the large variety of Haritaki available in the market, which is used in the manufacture of preparations like, Abhayarishta, Agastyaharitakee, Vyaghriharitakee Avaleha, etc.

Conclusion: The formulation and evaluation of scrub using Myrobalan demonstrated promising results. The incorporation of Myrobalan extract into the scrub formulation leveraged its potential benefits

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