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Review Article

Development and Testing of Body Scrub of Moringa Seeds

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ABSTRACT

One of the mis scrub creams contains moringa seed as an abrasive ingredient. Based on consumer demand for premium skin moisturizers, the goal of this experimental study is to determine the best formulation and characterization for moringa seed scrub cream. Interest in herbal formulae has grown along with the need for natural and environmentally friendly skincare products. This study suggests that moringa seeds might be useful in the creation of herbal skincare products, especially exfoliates for the face. A moringa seed body scrub must pass a battery of dermatological tests, including patch tests and physical stability tests, to confirm that it is safe for human use. Due to the physical abrasive nature of moringa seeds, safety testing is essential.

INTRODUCTION

Moringa oleifera, also known as the “miracle tree,” flourishes in tropical and subtropical locations worldwide. However, it is thought to be native to Afghanistan, Bangladesh, and India[1].M. oleifera is widely used in various industries, including cosmetics, nutrition, biogas generation, fertilizer, and wastewater treatment[2,3].

Cosmetic are the product which used for the purpose of beautifying, cleaning ,promoting attractiveness of altering appearance nowadays herbal cosmetic is on high demand herbal cosmetic are product which are used to purify and beautify the skin. In ancient time different herbal are used to purifying ,cleaning and beautifying them Herbal cosmetics are prepared by the bioactive ingredient and pharmaceutical product herbal cosmetic were gaining tremendous demand in the world market the wild range of herbal cosmetic product used as beautifying regime to satisfy the purpose of beautification Scrubber is formulated to remain healthy and of good appearance the skin surface require cleansing to remove grin sebus and other secretion dead cells, crusts and applied makeup a semi abrasive cosmetic lotion is applied to the face or body in order to cleanse the skin facial scrub

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contain course particle which help to exfoliating the skin[4].

Moringa oleifera has been shown to effectively treat malnutrition. Moringa has important phytochemicals in its leaves, pods, and seeds, making it a highly nutritious plant. Moringa is believed to provide seven times more vitamin C than oranges, ten times more vitamin A than carrots, seventeen times more calcium than milk, nine times more protein than yogurt, fifteen times more potassium than bananas, and twenty five times more iron than spinach[5].

Synonym: - Drumstick tree

Species: - moringa oleifera Lam

Family :- moringaceae

Genus:- moringa

Moringa contain various phytoconstituent such as alkaloid, saponin, steroid flavonoids. Moringa contains high enough mineral such as calcium ,sulphur, magnesium, copper, Phosphorus, zinc, manganese, potassium and sodium. Moringa seeds are rich in vitamin B1, B2, B3, C and E. vitamin B1,B2,B3 are known to have role in maintaining skin moisture and brightening the skin.

Ideal features of moringa scrub

1) It should have satisfactory consistency.
2) It should clean the skin.
3) It should be non-toxic and non-irritating to skin.
4) It should be non-damaging to the eye.
5) It should not have any side effect or causes irritation to the skin and eye.
6) It should remove dark spots on skin[6].

The nutrient component of M. oleifera seeds :

Nutrient	Seeds
Calories (Cal)	-
Protein (g)	35.97±0.19
Fat (g)	38.67±0.03
Carbohydrate (g)	8.67±0.12
Fiber (g)	2.87±0.03
Vitamin B1(mg)	0.05
Vitamin B2 (mg)	0.06
Vitamin B3 (mg)	0.2
Vitamin E (mg)	4.5±0.17
Calcium (mg)	751.67±4.41
Magnesium (mg)	45
Phosphorus (mg)	635±8.66
Potassium (mg)	75
Copper (mg)	-
Iron (mg)	5.20±0.15
Sulphur (mg)	-

All values are in 100 gm per plant material[7,8,9].

Taxonomical Classification

The kingdom Plantae, sub-kingdom : Tracheobronchial, super division : Spermatophyta, division : Magnoliophyta, and class : Magnoliopsida are all home to the plant M. oleifera. The Dilleniida subclass Oder: capparalesThe Moringaceae family Genus: Species: Oleifera Moringa[3,10,11].

Morphology:

The tree prefers a height of 500 meters above sea level and grows quickly in loamy, well-drained sandy soils[1]. The tree is typically small to medium in size, with naturally trifoliate leaves, flowers that are born on inflorescences that are 10 to 25 cm long, and fruits that are typically trifoliate and called pods[3,11]. Each tree can produce between 15,000 and 25,000 seeds annually, and the brown seeds have a semi-permeable hull. The trunk often grows straight, but it can occasionally be badly formed, the branches are typically haphazard, and the canopy is umbrella-shaped[12].

Botanical and Geographical Distribution

M. oleifera is found all over the world, it is native to India, Arabia, and the East Indies. Africa, the Caribbean, Latin America, the Pacific Islands, Florida, Madagascar, Central America, Cuba, the Philippines, Ethiopia, and Nigeria are among the regions where it is prevalent[2,13]. According to the plant's history, M. oleifera was brought to Africa, Southeast Africa, and the Philippines from India in antiquity[14,15]. M. oleifera is a deciduous tree that is usually planted in tropical and subtropical countries worldwide. It requires tropical and subtropical climates and grows at a temperature of roughly 25 to 35 °C[1]. It thrives on soil that is slightly acidic to alkaline, indirect sunlight, and no water logging[16].

Ethnopharmacological Applications of Moringa Oleifera :

Moringa oleifera has been used in India as medicine since the 18th century BCE. Traditional healers employed various parts of the plan root, bark, gum, leaf, fruit, flowers, seeds, and seed oil within the Ayurvedic and Unani medical systems to treat a wide range of ailments, including skin infections, swelling, anaemia, asthma, bronchitis, diarrhoea, headaches, joint pain, and more[17].

Biological effects of moringa oleifera

Moringa oleifera has bioactive chemicals that provide a variety of health advantages, including antibacterial, anti-inflammatory, anticancer, antidiabetic, antioxidant, hepatoprotective, and cardioprotective effects. Primary metabolites like polysaccharides and fibers have been related to improvements in chronic diseases, whereas secondary metabolites like flavonoids, alkaloids, and glycosides help to achieve these effects. Quercetin and other flavonoids reduce inflammation, while the plant's essential oils and extracts have antibacterial capabilities against specific fungi and bacteria. Antioxidants including polyphenols and ascorbic acid, as well as glycosylated isothiocyanate and β-sitosterol, have been shown to have anticancer properties. Moringa oleifera glycosides and β-sitosterol promote liver function, reduce blood pressure, and cholesterol levels[18].

Use of Moringa oleifera :

In Dietary supplements :

Moringa oleifera Application in Bakery Products Food products can benefit greatly from the usage of Moringa oleifera; according to some researchers, this plant can enhance their nutritional value by adding vitamins, minerals, vital amino acids, and oils[19].

In Medicinal effects:

Moringa has long been used in herbal medicine by Indians and Africans. The presence of phytochemicals makes it a good medicinal agent.

Anti-inflammatory Effects

Moringa oleifera has been extensively used in traditional medicine over many years for the treatment of several acute and chronic disorders. Experimental evidence from both in vitro and in vivo studies suggests that this plant possesses significant therapeutic potential against inflammation, hyperlipidemia, and hyperglycemia [20,21,22]. These biological activities are mainly associated with the presence of phytoconstituent such as flavonols and phenolic compounds, which contribute to its anti-inflammatory, antioxidant, and antimicrobial properties[20].

In recent years, increasing attention has been directed toward dietary components that influence inflammatory responses, as chronic low-grade

inflammation is strongly associated with obesity and insulin resistance. Key inflammatory biomarkers involved in obesity-related metabolic disorders include cytokines such as tumor necrosis factor-alpha (TNF-α), interleukin-1 beta (IL-1β), interleukin-6 (IL-6), as well as inducible nitric oxide synthase (iNOS) and nitric oxide (NO), which plays a crucial role in insulin signaling.[23,24,25] Excessive production of NO and increased expression of iNOS have been linked to the progression of various chronic inflammatory conditions[26].

Anti-tumor Effect

The study on Moringa oleifera (Philippine grown) isolated several bioactive compounds and evaluated their anti-genotoxic, anti-inflammatory, and anti-tumors promoting activities. one major compound, niazimicin, showed strong anti-tumor promoting effects in a two-stage mouse tumorigenesis model.

In vitro studies identified niazimicin, 4-(α-L-rhamnosyloxy) benzyl isothiocyanate, and β-sitosterol-3-O-β-D-glucopyranoside as strong anti-tumor promoters. In in vivo experiments on mouse skin, niazimicin delayed tumor promotion by 50% and significantly reduced papilloma incidence[13].

Anti-microbial Effect

The Moringa oleifera possesses significant antimicrobial activity. Different parts of the plant such as seeds, seed coat, stem bark and d root bark have demonstrated antimicrobial potential.

In research aqueous extracts of Moringa pod husks showed activity against Gram-positive, Gram-negative bacteria and yeast strains[27]. The Kirby–Bauer disc diffusion method, found that 50% ethanoic leaf extract showed mild antibacterial activity, though it had no effect against Pseudomonas species. Both aqueous and ethanoic leaf extracts were effective against certain bacterial infections, with stronger activity against Gram-positive bacteria such as Staphylococcus aureus and Enterococcus faecalis compared to Gram-negative bacteria like E. coli, Salmonella, and Pseudomonas aeruginosa.

Overall, Moringa shows promising antimicrobial properties, especially against Gram-positive bacteria[28].

Anti hyperglycemic effect

Diabetes mellitus is a chronic metabolic disorder characterized by persistent hyperglycemia and impaired glucose tolerance[29]. Moringa oleifera has been traditionally used in the treatment of diabetes and is very familiar with its pharmacological effects[31]. Its anti-hyperglycemic properties have been scientifically proven. Research reports that Moringa has high blood glucose-lowering. Dried fruit Methanolic extracts. powder has bioactive compounds including N-benzyl thiocarbamates, N- benzyl carbamates, and benzyl nitriles, which are insulin release stimulants of pancreatic beta cells. These compounds are also cyclooxygenase inhibitors and lipid peroxidation inhibitors activities[32].

CONCLUSION

The current study has indicated that Moringa seed (Moringa oleifera) can be used in creating herbal body scrub creams, which are advantageous natural ingredients. Due to the high level of phytochemicals, such as flavonoids, alkaloids, saponins, vitamins B-complex, C and E, and essential minerals, the moringa seeds are considered to have many skin benefits, such as protection against oxidants, hydration, exfoliation, and nourishment. The abrasive nature of the

moringa seed powder makes it a good natural exfoliant that could be used to clear refuse, dirt, dead skin cells, and extra sebum off the skin surface. Moreover, the vitamins and antioxidants will help to keep the skin healthy, hydrated, and bright. Due to these attributes, moringa seed scrub cream will suit the customers who would want herbal, natural, and environmentally friendly cosmetic alternatives. Evaluation properties like stability tests, viscosity, homogeneity, pH, spread ability, washability, physical appearance and dermatological safety tests (such as patch testing) are essential to ensure product quality and safety. It was demonstrated that properly developed moringa seed scrub cream can be topical, safe, and stable even at the recommended doses. To sum up, a lot of promises as a natural cosmetic is indicated by a body scrub cream produced on the basis of the moringa seeds. With appropriate formulation and safety testing it can become a safe, low cost, and eco-friendly alternative to synthetic exfoliating agents in the cosmetics industry. More research and broad clinical trials is recommended to enhance the performance of formulation and increase its clinical applications.

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