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A REVIEW ON THE PHYTOCHEMICAL AND THERAPEUTIC PERSPECTIVES OF MORINGA OLEIFERA AND CADAMBA IN SKIN-CARE REGIMENS

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ABSTRACT
A herbal skincare products are safer, more affordable, and more effective than synthetic ones, they have attracted a lot of interest. The phytochemical, medicinal, and cosmetic significance of Moringa oleifera and Neolamarckia cadamba two botanicals commonly utilized in traditional medicine and currently showing promise as components in herbal face pack formulations—is the main topic of this paper. A Rich in vitamins, flavonoids, and phenolic compounds, Moringa oleifera has potent antibacterial, antiinflammatory, antioxidant, and wound-healing qualities. Saponins, alkaloids, terpenoids, and tannins are among the several secondary metabolites found in cadamba that have antibacterial, antiinflammatory, hepatoprotective, and skin-soothing properties. When combined, these plants have synergistic benefits that promote skin tightening, better complexion, less acne, less tanning, and more dermal nourishing. The review focuses on the two plants' botanical descriptions, phytochemistry, pharmacological effects, toxicity profiles, and ethnomedical usage. The Future potential incorporating nanotechnology, green chemistry, and sophisticated preservation methods are also highlighted, along with challenges in herbal cosmetics, such as formulation stability, standardization, and microbiological contamination. All things considered, Moringa oleifera and Neolamarckia cadamba have great potential for creating herbal face pack formulas that are safe, efficient, and sustainable for use in contemporary skincare applications.

KEYWORDS: Moringa, Cadamba, Antioxidant, Antimicrobial, Herbal, hepatoprotective.

INTRODUCTION

Since the dawn of time, people have utilized herbs to manage, clean, and beautify themselves. Cosmetics are items used to clean, beautify, enhance one's appearance, or alter one's appearance. Masks make skin smooth, radiant, and velvety. The herbal paste used on the face to treat acne, pigmentation, scarring, and scars is called "mukha lepana" in Ayurveda. "Mukh lepana" is the term for applying a mixture of herbs on the skin. The term "cosmetic" is now often used to describe this procedure.[1] Generally a herbal face pack should reach the skin's outermost layers and subcutaneous tissues, giving the skin vital vitamins and nutrients without actually altering the skin's physiology. A face pack can be produced using a variety of ingredients depending on the kind of skin and the intended effect. The skin can be

enhanced by vitamins such as C or E. However, vitamin B3 is employed for its Qualities. Furthermore, skin-beneficial chemicals are utilized.[2]

Typically, this study uses two primary herbal components. Moringa oleifera and Cadamba easily exhibit antifungal, antibacterial, and anti-acne properties. They also lessen tanning and soften the skin on the face. The Cadamba is a significant member of the Rubeaceae family and is well-known for its therapeutic qualities Because of its biological and pharmacological properties, the plant is rich in secondary metabolites and a number of phytochemicals, including, ergosterol, calamine, calamine, quixotic acid, etc.

The Natural face packs do contain some vital vitamins that are required for the health and glow of our skin. These substances also prove to be beneficial for our skin in many ways. Natural Facial Packs are less complicated and pretty simple to use. They help us in looking after skin and also prove its worthiness by increasing the circulation of the blood within the veins of the face. Effects of the facial packs are generally temporary and for the regular glow it should be used 2-3 times a week.[2]

Using the primary ingredients Moringa oleifera and Cadamba along with additional natural substances that are covered below, this research report sought to create and assess a herbal face pack that would encourage skin tightening and nourishing while reducing tanning and acne.

Cadamba Neolamarckia

The Neolamarckia cadamba (Roxb.) Bosser, known commonly as the Cadamba [Syn. Anthocephalus cadamba (Roxb.) Miq.][Family:Rubiaceae]), commonly known as "Kadam Tree," in Hindi, which is found readily all over India. The species is occasionally mistakenly known as the "Anthocephalus chinensis," because of its scented orange flowers in huge, rounded, scented masses. It occurs in Garhwal, Himachal Pradesh, Sikkim, Assam, and Manipur, and from temperate Himalayas (Kashmir to Bhutan). It is common in Chamba, Kangra, Manipur, Bilaspur, Kulu, Sirmour and Simla district of Himachal Pradesh. It is commonest in Temperate tract of Pauri, Tehri, Chamoli, and Uttarkashi in Garhwal. As you see, the "Cadamba" in India, Nepal, Myanmar and western China. The "Kadam Tree," a "sacred symbol of indian culture and religion." It is also known as "Haripriya," "the be-loved of god." Kadamba Trees: It is a "large, evergreen, tropical tree," which may attain "[h]eight 148 feet or more." It is a "huge tree with broad ovals of branches from the relatively straight trunk." It is "fast growing in the first six to eight years," with branches which "spread out rather far." The "heavy, dark grey bark peels off in thin scales," which are "commonly longitudinally fissured." The "leaves are simple, The thick, spherical heads of kadam flowers have a diameter of roughly 5.5 cm. They smell good and range in color from red to orange. Fruits are spherical, solid, and have the appearance of little balls. When they are young, they are green, and when they are ripe, they turn yellow. There are roughly 8000 seeds in them. The shape of seeds is irregular or triangular.[3]

The Flowering usually starts when the plant is 4 or 5 years old. The fruits of the Cadamba are noticed when they grow in clusters and are covered with fleshycapsules, which accumulate in clusters to form a yellowish orange infructescence. You can produce wood and paper too, and you are quite attractive as well! It is an integral part of Indian mythology and religion. Cadamba trees are so dear to males that it is believed by many Indian religions that the God resides in Cadamba trees. "Ayi Jagadamb MadAmb / Kadamba Vana Priyavaasini Haasa-Rate" is a sanskrit mantra that translates as Devi likes to reside in Southern India where there are many Cadamba trees. The Cadamba is known to possess highly efficacious healing properties, among which the bark and leaves' extract possess major importance.

Various compounds and secondary metabolites like saponins, indole and quinoline alkaloids, secoiridoids, triterpenes, among many, with pharmacological properties, have been isolated from Cadamba species by various persons at different international locales worldwide.[3]

PLANT MONOGRAPH[5]

- Plant Name: Neolamarckia cadamba.
- Family: Rubiaceae Common names
- Hindi: कदम्ब Kadamb
- Assam: Kadam, Roghu
- Kanadda: Kaduavalatige
- Telugu: Rudrakskamba
- Tamil: Vellaikkatampu
- Malayalam: Attutekka, Katampu
- India: Kadambah and Priyaka Wild Cinchona
- Malaysia: Kalempayan
- kadambu, Indulam, Common bur-flower tree.

PHYTOCHEMISTRY[4]

Phytochemical class	Compounds finding
Alkaloids	Cadambine, cadamine, isocadambine,
Flavonoids	Querceticin, kaempferol, Catechin, Anthocyanin,
Terpenoids	Betullinic acid,
Tannins	Condensed tannins, Hydrolysed tannins
Phenolic compounds	Phenols, coumarin, 6-7-Dimethoxy coumarin.

Saponins	Saonin glycosides
Iridoids	Reported in literature
glycosides	Various plant glycosides
Carbohydrates	Sugars, polysaccharides
Proteins	Plant proteins

Botanical Characteristics

As A well-known species in the Rubiaceae family, Neolamarckia cadamba is distinguished by its unique botanical characteristics. The tree can reach a height of 45 meters and a diameter of 100 to 160 cm. It is cylindrical, straight trunk is frequently buttressed at the base. When a tree is young, its bark is smooth; as it ages, it becomes rough and fissured. Its color ranges from gray to dark brown. The N. Cadamba has big, opposite, simple, widely ovate leaves that are 10–60 cm long and 7–25 cm wide. The leaves have a pointed tip, prominent veins, and a glossy, dark green colour. The Stipules are large and interpetiolar, whereas petioles are short. The tree yields globose, very scented inflorescences that range in colour from yellow to orange. Each inflorescence, which is made up of many tiny flowers, can have a diameter of up to 5 cm. As the flowers have several stamens and a corolla with five lobes, making them hermaphrodites. As N. Cadamba produces syncarps, which are made up of several tiny, united drupelets. The fruit is globose, about 3–4 cm in diameter, and when mature, orange to crimson. It have numerous tiny seeds are inserted in the fleshy fruit.[5]

Figure 1: Main parts of Cadamba.

Pharmacological Properties

- **Antibacterial Activity:** The N. cadamba extracts have shown notable antibacterial qualities against a range of diseases. It is traditional usage in treating illnesses is supported by studies showing its efficacy against bacteria, fungi, and viruses.
- **Anti-inflammatory Activity:** As numerous in vitro and in vivo investigations have demonstrated the anti-inflammatory properties of N. Cadamba extracts. The bioactive substances that block pro-inflammatory mediators are thought to be responsible for these effects.
- **Antioxidant Activity:** The N. Cadamba's high flavonoid and phenolic content is associated with its antioxidant potential. By scavenging free radicals, these antioxidants lessen oxidative stress and possible cell and tissue damage.
- **Anticancer Activity:** According to preliminary research, certain of N. Cadamba's compounds have cytotoxic effects on cancer cell lines. These results point to the possibility of using the tree's extracts to create new anticancer treatments.
- **Hepatoprotective Effects:** The N. Cadamba has demonstrated potential in shielding the liver from harm caused by poisons. Its anti-inflammatory and antioxidant qualities are probably responsible for this hepatoprotective action.[5]

Ethnobotanical Uses[5]

Throughout its natural habitat, *Neolamarckia cadamba* has long been used in traditional medical and cultural practices. The tree's bark, leaves, petals, and fruit are all used for their therapeutic qualities.

Table 1: Ethnobotanical uses of Cadamba.

Plant Part	Traditional Uses
Bark	It Used to treat uterine problems, fever, and anemia; applied externally for wound healing and various skin conditions.
Leaves	As It is Applied as a poultice for rheumatic pain and swelling; leaf decoction used for diarrhea, dysentery, and other gastrointestinal issues.
Flowers (Blooms)	It Used as a general tonic; supports treatment of liver disorders and diabetes; extracts used in traditional cosmetics.

AYURVEDIC USES

In Santals[6]

Table 3: Ayurvedic uses of Cadamba in santals.

Plant part	Preparation Form	Traditional Use
Bark	Paste; Juice prepared by grinding bark with mango bark + sal bark and mixed with a little shell lime	The Patients with cholera are given the combined juice mixture, while those with a persistent fever are given paste.
Stem-bark	Decoction	Given to patients suffering from dyspepsia
Leaf	Applied directly to wounds; Juice with common salt	Leaf are used externally for sores and wounds; for stomach pain Leaf juice with common salt are used.

Yajurveda shukla[6]

Table 2: Ayurvedic uses of cadamba in shukla yajurveda.

Plant Part	Traditional Uses
Bark	Strengthens the body; reduces fever;.
Leaf	Used to cure pimples and wounds; acts as an analgesic (pain reliever).
Leaf juice	It relieves burning sensation of palms and feet; helps with scaling of skin.
Leaf extract	Used for gargling.
Fruit	It helpful in quenching thirst during high fever.

CHEMICAL CONSTITUENT[7]

Table 3: chemical constituents of cadamba.

Plant Part	Major Phytochemical Constituents
Heartwood	Includes Pinocembrin, Taxifolin, Aromadendrin, Quercetin,
Stem	Padmakastein, Amygdalin,
Root	Ursolic acid, Glucogenkwanin, Stigmasterol, Prunetinoside,
Seeds	Naringenin-5-O-α-L-rhamnopyranoside
Leaves	Kaempferol, Quercetin-3-rhamnoglucoside,
Fruits	Linalool, Geraniol, Camphene, Linalyl acetate, α-Selinene, 2-Nonanol, β-Phellandrene, Terpinolene,

Microscopy

The elongated, unicellular trichome, the rubiaceous stomata in the leaf lower surface (starch grain, calcium oxalate crystal and presence of the nucleus as transverse section), wedge-shaped vascular bundles, ring-shaped phloem and the oil globules could be observed in microscopic examination. The leaves of Neolamarckia Cadamba crushed with hands, smell like methyl salicylate. Bark consists of rectangular cells with thin walls, phloem fibres, and some elements filled with prismatic clusters of calcium oxalate crystals and chlorophyll.[8]

Cadamba Toxicity Studies

To date, there have been no reported cases of N. Cadamba having poisonous properties based on recorded use. Nonetheless, the absence of standard data on the toxicological aspect (Acceptable Daily Intake, or ADI, or No Observed Adverse effect Level, or NOEL) in N. Cadamba, as in the case of most plants that have potential uses in food, makes the determination of the value of the ADI or NOEL a laborious process due to its compositional variability on a batch-by-batch basis.[9]

MORINGA OLEIFERA

There are 14 other species of the genus Moringa including Moringa oleifera Lam (Moringaceae). M. Oleifera is the accepted name for this species by "The Plant List" (http://www.theplantlist.org), and no synonymy, has been reported. The tree reaches a height of 5–10 m. Mainly it has three pinnate compound leaves, characterised by a yellow petiole (without red stripes) and leaflets 12–18 millimetres long. The bisexual flowers of M. oleifera are white, or milky white. Its seeds and pods are almost round. As M. OLEIFERA is the most preferred crop, It grows best in temperatures of between 25 and 35°C Drought barely influences it, that's why various types of soil have

tailored to it today.[5]

The most extensively grown species of the genus Moringa is Moringa oleifera, popularly called the drumstick tree. It is a kind of horseradish tree. There are numerous more names for M. oleifera in other nations: Dandalonbin, Mlonge (from Swahili) One of the 13 candida, the Malunggay name is used extensively outside of Central Lu. Although it originated in the northwestern Indian Himalayas, it is currently found in India, Ceylon, the Philippines, Thailand, Malaysia, Myanmar (Burma), Pakistan, and Sri Lanka. Nigeria, Cuba, Jamaica, and the West Indies have also been exposed to it. It is currently route to infecting new areas.[5] As pretty little deciduous tree belongs to the Moringaceae family. The tree is five to ten meters tallAs each leaf is massive, up to around 90 cm long, and has opposing pinnae. The leaves alternate, with the older leaves falling off quickly. They are five centimeters from the center stem of the plant. The terminal leaflets of moringa are organized in opposing pairs and are much bigger. Leaflets are usually round-elliptic and up to 2.5 cm long, though they can vary in size and shape. The underside of them is pale, while the top is dark green.[10]

One of the most popular plant species that can grow in various temperatures and climatic conditions (lee side) is M. oleifera which can survive severe growing environments such as high temperature and water shortage.[13] Due to this, it thrives in different types of soil including semi-arid, desert, or rainy tropical soils. The plant is not restricted to pH 7.0 and may be able to live in acidic or alkaline soil (between 5.0-9.0) as well. As It does tolerate neutral pH better, as well as good drainage. It is a quite thermophilic yeast, with an optimal temperature of 25–40◦C, but it tolerantes temperature changes between −1 and 3◦C (cold months) and between 38 and 48◦C (hot months). The yield–cutting time relationship and yield as a function of planting density According to the results on yield, cutting time, and planting density (Table 2), the maximum fresh matter and dry matter yields over evaluations were obtained for the highest (0.20 m × 0.20 m) planting density and intermediate cut height (30 cm).[11]

VALUE ADDED PRODUCTS

A renowned plant, Moringa oleifera parts including leaves, pods, flowers & seeds consist of numerous nutraceuticals and essential nutrients such as vitamins, fatty acids (polyunsaturated fatty acids), micro-and macrominerals (trace and macroelements) amino acids. This offers an opportunitiy for commercial enterprise to produce supplementary products from parts of the Moringa oleifera plant.[12]

MORINGA LEAF POWDER 1) Leaf powder special-available plain retail or loose sachets

Dried-and-ground whole-leaf powder marketed as a superfood for your tea, smoothie, cooked dishes and homemade cosmetics.

Banyan Botanicals Organic Moringa Powder and Kuli Kuli Pure Organic Moringa Powder are just a couple that I can think of.

2) Tablets or capsules (dietary supplement form of composition)

Powdered, either as a standardized or whole-leaf product and then compressed into tablet form or packed in vegetarian capsules — popular for dosage and convenience.

Examples and normal dosage: Now foods Moringa Leaf vegetable capsules (take 2 caps/day), Organic India Moringa capsules (labelled directions are 1-2 discs 1-2×/day). These merchandise illustrate how moringa is sold as a daily dietary aid.

3) Convenient, food and beverages, bars and the like

Moringa is added as a “green” nutrition claim to energy bars, meal replacement shakes and fortified beverages. Kuli Kuli, for example, sells moringa powders, ready-to-mix smoothies and bars that tout moringa’s potential as an antioxidant and protein booster.

4) External applications (Oils, Cleaners, Creams and Face packs)

Moringa leaf powder for mixing into your D.I.Y face packs or moringa oil or extract in finished cosmetic creams and masks, sold for their supposed anti-oxidant and cleaning capabilities.

The Skin Story’s All-in-1 face pack, de-tan pack and moisturizers with moringa (available in India), are some examples. In commercial cosmetics, Moringa oil is used as an antioxidant and emollient in skin creams and lotions (see body butters & moisturizers).

5) Market formats for ingredients

Bulk or retail powder-use in recipes, supplements and homemade gel mask. (Banyan Botanicals, Kuli Kuli).

Tablets or capsules—for uniform dosing (NOW Foods, Organic India).

Oils and extracts: these are concentrated or oil fractions, used in topical skin care and cosmetic products (common entries on ingredient lists of a product).[12]

Toxicity Studies of Moringa oleifera

Since the above-described dose-dependent side effects (alterations in the liver, weight loss, and occasional geno-or cytotoxic reactions) are found in certain animal subchronic/toxicity tests and in certain concentrations (or seeds/lectins), in short tests in animals and humans, it is currently assessed as safe for use in concentrations that are found in dietary supplements that are commonly present in plant material of Moringa oleifera. Conversely, with regard to the preparations, one has to consider impurities, plant material extract standardization, and toxicity tests that encompass acute toxicity, subchronic/subacute toxicities, and also

genotoxicity, reproductive toxicities, in case of pregnant women.

Acute toxicity and LD50

The Several rodensl9 Results indicate a high value of LD^O or lack of values at doses of up to ~2,000 mg/kg (Le., low acute toxicity for leaf preparations). This may be the reason why leaf powders and extracts with "LD_0 > 2,000 mg/kg" is given in several publications. Besides the changes observed at high doses through Subacute or Subchronic studies (study duration: Some "sub chronic" 60-90-day studies report changes of body weight or other parameters at high doses. In contrast to this, various studies of 28-90 days reveal no adverse effect for low-to-moderate doses (and one recent 90-day study warns against application of high doses for a long-term extract of ~> 500-600 mg/kg). This means a standardized extract and dose must demonstrate chronic safety.

Genotoxicity and cytotoxic

There are Some in vitro findings of cytotoxicity (typically high concentrations) and Genotoxic indications at levels well above them have been noted in a few animal tests (‚Stohs Review underscores that there is genotoxicity at doses ≫ normal human dietary intake'). Concentrated fractions & seed lectins could be more toxic & bioactive than those of the leaves. You could try testing your actual extract using different methods of genotoxicity testing (Ames, micronucleus, comet).

Clinical safety and human data

The Trials demonstrate daily dosages of powdered leaf in gram exposures (several g/day) with mostly moderate transient GI symptoms at high doses; human RCTs and short trials are scarce but are consistent with a good tolerability at regular supplement levels. Some systematic investigations advocate for more standardized trials, although do not identify any clinically relevant toxicities/hazards in man. Moringa is primarily regarded as food or supplement by the regulatory bodies and nutrient safety assessments, it is not a licensed medicinal product; so some EU/EFSA assessments still ask for more evidence prior to licensing the selling of specific products.[10]

Taxonomical Classification

Table 4: Taxonomical classification of moringa.

Kingdom	Plantae
Sub kingdom	Tracheobionta
Super Division	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Order	Capparales
Family	Moringceae
Species	oleifera

Figure 2: parts of Moringa oleifera.

PHARMACOLOGICAL PROPERTIES[14]

- **Anti-inflammatory:** One of the most promising uses for moringa extract is treating an array of acute and chronic inflammations. Inflammation can lead to chronic diseases, such as obesity, diabetes, respiratory disease, cardiovascular disease and arthritis. Moringa's antiinflammatory health benefits are traced to its phytochemicals, which prevent developing inflammationcausing polypeptides and enzymes in the body; leaf juice concentrate can stop this type of intracellular inflammation.
- **Anti-diabetic:** Moringa intensely lowers the chances of acquiring diabetes. Diabetics' blood sugar and cholesterol content are greatly lowered by the powder extracted from its leaves due to its ability to reduce oxidation and blood glucose and lipid levels. Moringa has been proven to completely treat patients diagnosed with Type 1 Diabetes, which is associated with the low secretion of insulin into the blood. The level of blood glucose in the body is

regulated by the hormone insulin in the body. Type 2 Diabetes is associated with the body becoming resistant to the hormone insulin. It is believed that the abnormal secretion from beta cells in the body causes type 2 Diabetes. Blood glucose builds up due to the beta cells not responding to the insulin due to the inability to sense the glucose content in the blood. Various studies have shown that moringa possesses antidiabetic properties.

- **It protects the heart:** The heart-healthy advantages of moringa leaf powder include lowered cholesterol, blood lipid balance, and the avoidance of artery plaque. This plant is especially helpful for cardiovascular problems because of its amazing mix of diuretic, lipid-lowering, and blood pressure-lowering qualities. The Moringa leaf juice significantly helps to stabilize blood pressure. It has been demonstrated that the mustard oil and thiocarbamate glycosides found in moringa leaves lower blood pressure.
- **Encourages brain health:** It has a high antioxidant and neuro-stimulating potential because moringa helps promote brain health by improving cognitive functions. It has shown several promising outcomes when used as an Alzheimer's treatment. The richness of vitamins C and E helps normalize the presence of the neurotransmitters serotonin, dopamine, and noradrenalin.

These chemicals are essential for memory, mood, organ functions, and reaction to pleasure and stress, among many others, especially with regard to ailments like depression and psychosis.

- **Hepatoprotective:** It is believed that moringa is important in safeguarding the liver against oxidation, toxicity, as well as damage because of the very high polyphenol content present in the leaf and flower of moringa. The blood level regulation of the liver enzymes may contribute to improving the protein level of the liver as well as reducing the level of oxidative stress associated with it. The functions of the liver in carrying out such processes depend on the blood supply to the liver, but not the level of the hepatocyte enzymes. For example, if the blood level of the liver enzymes is very low, then it may influence the purification of blood by the liver.
- **Antibacterial and Antimicrobial:** The Moringa can fight infections. It has proven to be useful against bacteria that cause skin infections, blood and urinary tract infections, and stomach problems as well as fungi responsible for skin infections. As Moringa oleifera roots have also been reported to be antibacterial and showed high measure of antimicrobial compounds. Its bark and stem juice possesses antibacterial activity (against Staphylococcus aureus) and its bark extract has shown antifungal activity.
- **Wound healing:** Due to the blood-coagulation properties in its leaves, roots and seeds, applying moringa directly to a wound can help it to heal more quickly — as well as how quickly cuts, scrapes or wounds coagulate. Pradnya V.I. Hukkeri observed that the ethanolic and ethyl acetate extracts of Moringa oleifera leaves showed antipyretic and wound healing effects. Wound healing potential of dried leaves ethyl acetate extract (10% extracts in ointment form) is noted on excision, incision and dead space (granuloma) wound model; seeds ethanol and ethyl acetate extract demonstrate potent pyretic action.[14]

MACROSCOPICAL DESCRIPTION

The Drug occurs as dried small pieces of stems, roots, leaves, bud, flowers And fruits; roots were brown in colour with rootlets, circular, branched, 4-8 cm in length, rough texture; stem rounded, pale green – light brown, Slightly rough texture, 4-7 cm long; leaflets shriveled, shrinked, curled, Pale green; flower pale white, shriveled, margins curled; fruit pale green, Twisted, deep ridges and furrows present, somewhat rounded; seed Pale reddish brown, winged, wings papery thin, shriveled and shrinked.[15]

Types of Herbal Face Packs and Their Uses

Numerous herbal face packs have been developed to address distinct skin issues. Here are a few examples:

1. For Oily and Acne-Prone Skin: A mixture of fuller's earth, turmeric, and neem powder helps reduce excess oil and combat bacteria that cause acne.
2. Aloe vera, honey, and sandalwood packs offer deep hydration and relieve irritated skin for dry and sensitive skin.
3. For Evening and Brightening Skin Tone: To lessen pigmentation and give a natural glow, blends of turmeric, gram flour, and rose water are applied.
4. For Anti-Aging: By feeding the skin and increasing its elasticity, herbal packs enhanced with green tea, aloe vera, and honey target fine lines and wrinkles.[23]

Although herbal face packs are usually safe, take the following safety measures:

1. **Patch Test:** To rule out sensitivity or allergic responses, always do a patch test prior to full-face treatment.
2. **Freshness of components:** To prevent contamination and guarantee the most possible benefits, use premium, fresh herbal components.
3. **Prevent Overuse:** Using some herbs, like turmeric, excessively can irritate or discolour the skin.
4. **Understand Your Skin Type:** To prevent dryness or excessive oiliness, use herbal packs that are appropriate for your skin type.
5. **Consultation:** Before using herbal packs, anyone with skin disorders including eczema, psoriasis, or severe acne should speak with a dermatologist.[23]

FUTURE PROSPECTS IN HERBAL FORMULATION

- Creation of environment friendly cosmetics; commercial manufacturing.
- Multipurpose application in skincare.
- Improvements in stability and shelf life.
- Possibility of new, commercial items.
- Look for ecological and reasonably priced cosmetics.
- Development of advanced formulations.
- Scope for anti-pollution skin care production.

CONCLUSION

The *Moringa oleifera* and *Neolamarckia cadamba* are used in the manufacture of a herbal face pack that shows great promise as a safe, natural, and efficient skincare product. Because of its abundance of vitamins, flavonoids, and phenolics, Moringa oleifera has strong antioxidant, anti-inflammatory, and nourishing qualities, while Cadamba has important antibacterial, wound-healing, and skinsoothing characteristics. When combined, these botanicals improve the texture of the skin, lessen oxidative stress, and promote general dermal health. The combined formulation is appropriate for frequent topical application since it exhibits good spreadability, stability, and aesthetic acceptance.

The face pack provides an affordable substitute for synthetic cosmetics because both plants are widely accessible and economically viable. Its potential as a helpful herbal cosmetic preparation is substantially supported by existing data, but more clinical evaluation and standardization research would increase the evidence for its usefulness.

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