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Review Article

**REVIEW OF NATURAL HERBS CONTAINING ANTI-AGING
AND ANTI-WRINKLE GEL****Mr. Ishwar Rubja Valvi, Mrs. Kranti D. Patil, Dr. G .P. Vadnere.**¹Department of Pharmacognosy, Smt. Sharadchandrika Suresh Patil College of Pharmacy,
Chopda, Maharashtra, India.**Article Received:** February 2023 **Accepted:** March 2023 **Published:** April 2023**Abstract:**

There is urgent need for Natural Herbs Containing Anti-aging and Anti-Wrinkle Gel production and from local raw materials in order to supplement the existing ones. I recommend more research to be carried out on extraction of essential oil and its formulation from vast variety of oil bearing plants in our ecosystem. Further work should be carried out to analysis the Natural oil as this could not be done due to time constraint. Characterization of All oils components should be made in order to determine which is responsible for the characteristics of Pungent and Aromatic odor. Furthermore, large scale extraction of Natural oil through enzymatic process should be explored; feasibility studies on the economic viability of the process should be conducted. Rose and Lavender tops the list of herbs for fighting visible signs of ageing on your skin. It is the new anti-ageing super food that can help you in your fight against wrinkles. Topical application of Rose and Lavender can prove beneficial in retaining the moisture and hydration of the skin, reduce roughness, and give a smooth texture to the surface.

Keywords: Anti-Aging, Anti-Wrinkle, Lavender, Rose.

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INTRODUCTION:

Aging and wrinkles:

Aging and Wrinkles are natural. as people get of age, their skin gets thinner, drier, and less elastic, and less capable to defend itself from damage. This leads to wrinkles, creases, and lines on the skin. UV light breaks the collagen and elastin fibers in the skin. These fibers form the skin's connective tissue. They are located below the surface of the skin, and they support the skin. Destroy this layer causes the skin to become weaker and less flexible. The skin starts to languish, and crinkles occur.

A wrinkle, also known as a rhytide, is a fold, ridge or crease in an otherwise smooth surface, such as on skin or fabric. Skin wrinkles typically appear as a result of ageing processes such as glycation,[1] habitual sleeping positions,[2] loss of body mass, sun damage,[3] or temporarily, as the result of prolonged immersion in water. Age wrinkling in the skin is promoted by habitual facial expressions, aging, sun damage, smoking, poor hydration, and various other factors.[4] In humans, it can also be prevented to some degree by avoiding excessive solar exposure and through diet (in particular through consumption of carotenoids, tocopherols and flavonoids, vitamins (A, C, D and E), essential omega-3-fatty acids, certain proteins and lactobacilli).[5]

Skin aging is a part of a natural human "aging mosaic" which becomes evident and follows different trajectories in different organs, tissues and cells with time. While the aging signs of internal organs are masked from the ambient "eyes," the skin provides first obvious marks of the passing time. Skin aging is a complex biological process influenced by combination of endogenous or intrinsic (genetics, cellular metabolism, hormone and metabolic processes) and exogenous or extrinsic (chronic light exposure, pollution, ionizing radiation, chemicals, toxins) factors.¹ These factors lead together to cumulative structural and physiological alterations and progressive changes in each skin layer as well as changes in skin appearance, especially, on the sun-exposed skin areas. In contrast to thin and atrophic, finely wrinkled and dry intrinsically aged skin, premature photoaged skin typically shows a thickened epidermis, mottled discoloration, deep wrinkles, laxity, dullness and roughness.¹³⁻¹⁸ Gradual loss of skin elasticity leads to the phenomenon of sagging.¹⁹ Slowing of the epidermal turnover rate and cell cycle lengthening coincides with a slower wound healing and less effective desquamation in older adults. This fact is important when esthetic procedures are scheduled.²⁰ On the other side, many of these features are targets to

product application or procedures to accelerate the cell cycle, in the belief that a faster turnover rate will yield improvement in skin appearance and will speed wound healing. A marked loss of fibrillin-positive structures as well as a reduced content of collagen type VII (Col-7), may contribute to wrinkles by weakening the bond between dermis and epidermis of extrinsically age skin. Sun-exposed aged skin is characterized by the solar elastosis. The sparse distribution and decrease in collagen content in photoaged skin can be due to increased collagen degradation by various matrix metalloproteinases, serine, and other proteases irrespective of the same collagen production. In older skin, collagen looks irregular and disorganized, the ratio of Col-3, to Col-1 has been shown to increase, due, significantly, to a loss of Col-1.²⁹ The overall collagen content per unit area of the skin surface is known to decline approximately 1%/year. Glycosaminoglycans (GAGs) are among the primary dermal skin matrix constituents assisting in binding water. In photo-aged skin, GAGs may be associated with abnormal elastotic material and thus be unable to function effectively. The total hyaluronic acid (HA) level in the dermis of skin that age intrinsically remains stable; however, epidermal HA diminishes markedly. [6, 7]

Three primary structural components of the dermis, collagen, elastin and GAGs have been the subjects of the majority of anti-aging research and efforts for aesthetic-anti-aging strategies pertaining to the skin, from "anti-wrinkle creams" to various filling agents.

Presentation of aging of the entire face is associated with the gravity impact, muscles action, loss of volume, diminishing and redistribution of superficial and deep fat, loss of bony skeleton support what all together lead to the face sagging, changes in shape and contour. Regardless of the fact that aging is a biological inevitable process and not a pathological condition it is correlated with various skin and body pathologies, including degenerative disorders, benign and malignant neoplasms. The 'successful aging' paradigm, focuses on health and active participation in life, counters traditional conceptualizations of aging as a time of disease and is increasingly equated with minimizing age signs on the skin, face and body. From this perspective, preventative aesthetic dermatology might supplement the request for healthy aging, treat or prevent certain cutaneous disorders, notably skin cancer, and delay skin aging combining local and systemic methods of therapy, instrumental devices and invasive procedures. The mainspring of any skin anti-aging therapy is to achieve a healthy, smooth, blemish-free, translucent

and resilient skin.³⁸ In clinical practice, “to look better” doesn’t mean to “look younger.” That is why it is so important to understand patients’ wishes and to orientate them to the treatment modality that will give the most satisfying results whereas knowing all available treatment techniques. The age, previous procedures or surgery, general health status, type of the skin, style of life and many other factors should be taken into consideration before choosing the strategy for the individual case. The desired

therapeutic anti-aging effect of the skin is continuous, step-by step process, which combines various methods of the skin bio-revitalization and rejuvenation, augmentation, restoration of each skin layer individually and in the light of many other factors—from a style of the life to the immune, genetic, emotional and health status in general. This review will emphasize the most important topical and systemic therapeutic agents and trends in the use of invasive procedures.[8,9]



Fig No-01 Signs of Aging

Types of Wrinkles:

Sleep wrinkles:

Sleep wrinkles are created and reinforced when the face is compressed against a pillow or bed surface in side or stomach sleeping positions during sleep. They appear in predictable locations due to the underlying superficial musculoaponeurotic system (SMAS), and are usually distinct from wrinkles of facial expression. As with wrinkles of facial expression, sleep wrinkles can deepen and become permanent over time, unless the habitual sleeping positions which cause the wrinkles are altered.[6]

Water-immersion wrinkling:

The wrinkles that occur in skin over prolonged exposure to water are sometimes referred to as pruned fingers or water aging. This is a temporary skin condition where the skin on the palms of the hand or feet becomes wrinkly. This wrinkling response may have imparted an evolutionary benefit by providing improved traction in wet conditions, and a better grasp of wet objects. These results were called into question by a 2014 study that failed to reproduce any improvement of handling wet objects with wrinkled fingertips. However, a 2020 study of

gripping efficiency found that wrinkles decreased the force required to grip wet objects by 20%, supporting the traction hypothesis. Prior to a 1935 study, the common explanation was based on water absorption in the keratin-laden epithelial skin when immersed in water, causing the skin to expand and resulting in a larger surface area, forcing it to wrinkle. Usually the tips of the fingers and toes are the first to wrinkle because of a thicker layer of keratin and an absence of hairs which secrete the protective oil called sebum.

In the 1935 study, however, Lewis and Pickering were studying patients with palsy of the median nerve when they discovered that skin wrinkling did not occur in the areas of the patients' skin normally innervated by the damaged nerve. This suggested that the nervous system plays an essential role in wrinkling, so the phenomenon could not be entirely explained simply by water absorption. Recent research shows that wrinkling is related to vasoconstriction. Water probably initiates the wrinkling process by altering the balance of electrolytes in the skin as it diffuses into the hands and soles via their many sweat ducts. This could alter the stability of the membranes of the many neurons

that synapse on the many blood vessels underneath skin, causing them to fire more rapidly. Increased neuronal firing causes blood vessels to constrict,

decreasing the amount of fluid underneath the skin. This decrease in fluid would cause a decrease in tension, causing the skin to become wrinkly.



Fig No-02 Pre-mature Aging

Causes for aging wrinkles:

Wrinkles are a natural part of the aging process. As people get older, their skin becomes thinner, drier, and less elastic, which means it is less able to protect itself from damage. This leads to wrinkles, creases, and lines on the skin. Facial expressions, such as smiling, frowning, or squinting, lead to the development of fine lines and wrinkles at a young age. These lines deepen as the person gets older. When a person is young, their skin springs back. As they get older, the skin loses its flexibility, and it becomes more difficult for the skin to spring back, resulting in permanent grooves. Wrinkles affect people of different skin tones differently due to structural and functional differences in the skin. Research Trusted Source indicates that the compact dermis is thicker in the skin of Black and Asian people, which likely protects against facial wrinkles. Many factors affect the development of wrinkles, including:

- sun exposure
- smoking
- dehydration
- some medications
- environmental and genetic factors

Exposure to ultraviolet (UV) light from sunbathing, tanning booths, and outdoor sports increases the development of wrinkles.

UV light breaks down the collagen and elastin fibers in the skin. These fibers form the connective tissue that supports the skin. As this layer breaks down, the skin becomes weaker and less flexible. The skin starts to droop, and wrinkles appear.

Darker skin contains more melanin and protects from many harmful effects of UV radiation.

People who work in sunlight have a higher chance of early wrinkles. Wearing clothes that cover the skin, such as hats or long sleeves, may delay the development of wrinkles.

Regular smoking accelerates the aging process of skin because it reduces the blood supply to the skin. Alcohol dehydrates the skin, and dry skin is more likely to develop wrinkles.

Treatment:

There are many treatments available to help reduce fine lines on the skin. For deeper creases, a person may require more aggressive techniques, such as plastic surgery or injections of fillers.

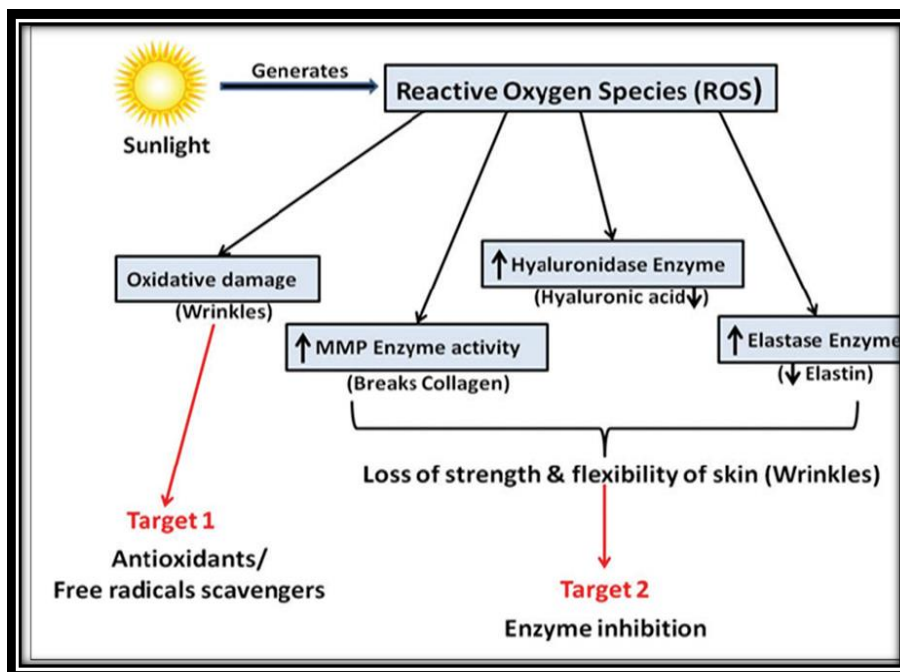


Fig No-03 Mechanism action of Aging

Medications:

Topical retinoids derive from vitamin A. They aim to reduce fine wrinkles, hyperpigmentation, and skin roughness. They do this by increasing collagen production in the skin. However, using retinoids can cause the skin to burn in sunlight, so it's essential to protect the skin while using the cream. Possible adverse effects include:

- dryness
- itching
- a burning sensation
- tingling
- discolored areas

The active ingredients in wrinkle creams vary in type and concentration. Concentrations in an over-the-counter (OTC) wrinkle creams will be significantly lower than a prescription one. The concentration will affect how well they work.

People may notice slight-to-modest results from the following medications:

- retinol
- alpha hydroxy acids
- kinetin
- coenzyme Q10
- copper peptides
- antioxidants

Dermabrasion:

Dermabrasion is a surgical procedure that involves the controlled wearing away, or abrasion, of the upper layers of skin with a rapidly rotating device. Dermabrasion aims to remove fine wrinkles, moles, tattoos, acne scars, and other types of scar.

This procedure may cause scabbing, swelling, and changes in skin color. These symptoms generally fade after 2 weeks, but some signs may remain for several months. A person will not achieve their desired results immediately and may not see any improvements for several months. Microdermabrasion is a less invasive procedure. It involves spraying microcrystals of aluminum oxide across the surface of the skin. Some practitioners use a handheld device with fine diamond crystals and a powerful vacuum to remove the particles as they brush it over the skin. This type of treatment aims to give a fresher and smoother appearance to the skin and reduce the appearance of lines and wrinkles, enlarged pores, coarse skin, and sun damage.' The results are only temporary, and people may require repeated treatments. Non-ablative lasers, radiofrequency (RF) devices, and pulsed light sources do not damage the epidermis. Laser and light source therapy treatments destroy the outer layer of the skin to decrease wrinkles. Radiofrequency (RF) treatments heat the underlying dermis and stimulate the development of new collagen fibers. This tightens skin and decreases wrinkles. It might take several months before a person notices a decrease in wrinkles after RF treatment. In a 2013 study Trusted Source,

over 90% of participants who underwent RF were satisfied with the results at 1 month and 6 months after treatment. RF does not cause a wound. However, the researchers called for further investigations into safety and effectiveness. When the wound heals from laser or light surgery, the new skin is smoother and tighter. Ablative laser resurfacing can take several months to heal, Newer therapies using laser technology may heal more quickly. A person may need several treatments before their skin feels firmer and appears refreshed, but recovery times are faster.

Botox:

Botulinum toxin type A, or Botox, blocks the chemical signals that cause muscles to contract. Doctors use it to treat some medical conditions. A cosmetic professional will use it to reduce wrinkles by injecting small doses of Botox into targeted muscles. If the muscles can no longer tighten, the skin flattens, giving a less wrinkled and smoother appearance. Botox can decrease the lines on the forehead, the frown lines between the eyes, and “crow’s feet” around the corners of the eyes. According to the American Society of Plastic Surgeons, a person will see results after a few days to a week. The changes usually last for 3–4 months, so many people get repeat injections.

Chemical peels:

A chemical peel involves applying a chemical solution to the desired areas, causing the dead skin to shed and eventually peel off. The regenerated skin tends to be smoother than the old skin. People can buy some types of chemical peels without a medical license. However, it’s best to consult a medical healthcare professional for the treatment.

Facelift:

A facelift, or a rhytidectomy, is a type of cosmetic surgery that aims to make people look more youthful. It usually involves removing some facial skin and fat, with or without tightening the underlying tissues. A study in Plastic and Reconstructive Surgery suggests that some elements of a facelift should last for about 5 and a half years^{Trusted Source}, but it may lose some effect around the neck. Healing times may be lengthy, and the person will experience bruising and swelling for a few weeks after surgery.

Fillers:

Soft tissue fillers include collagen, hyaluronic acid, or fat. A cosmetic professional will inject fillers into deeper face wrinkles, plumping and smoothing them out to give the skin more volume. People may sometimes experience swelling and bruising in the

affected areas for a short period. As with Botox treatment, these treatments are temporary, and people may require regular injections. The results depend on several factors, including where the wrinkles are and their depth.

Prevention:

Everybody gets wrinkles and lines that become more prominent over time. Some ways to prevent or reduce their development include:

- Using sun protection. Avoiding UV exposure reduces skin damage. Dermatologists recommend wearing a hat and clothing to protect the skin and using a sunscreen of SPF 30 or higher every day.
- Moisturizing regularly. Moisturizing prevents dryness, which reduces the chance of wrinkles forming.
- Quitting smoking. Smoking greatly speeds up skin aging and causes skin wrinkles.
- Drinking less alcohol. Alcohol dehydrates the skin, which causes damage over time.
- Eating a healthful, balanced diet. Eating plenty of fruit and vegetables can prevent skin damage, whereas sugar and refined carbs can speed up skin aging.
- Washing your face twice a day. Use a gentle cleanser. Rubbing the skin can cause irritation and speed up skin aging.
- Washing your face after heavy sweating. Sweat can irritate the skin, causing damage over time. This is especially true when wearing a hat or helmet.

Changes in Skin Aging:

Exposed directly to the air, skin is not only subject to intrinsic aging but also superimposed by extrinsic aging. These aging processes are accompanied by phenotypic changes in cutaneous cells as well as structural and functional changes in extracellular matrix components such as collagens, elastin, and proteoglycans that are required to provide tensile strength, elasticity, and hydration to the skin, respectively.

Changes in Intrinsic Aging:

Intrinsic skin aging is a process of chronologically physiological change. Aging of photoprotected areas for example, the inner side of the upper arm, is mainly due to intrinsic genetic or metabolic factors, whereas exposed skin areas are additionally influenced by extrinsic factors, especially solar UV radiation. For the intrinsically aged skin, the most remarkable histological changes occur within the basal cell layer. Research finds that as a person ages,

proliferation of cells in the basal layer reduces. The epidermis then becomes thinner, and the contact surface area between dermis and epidermis decreases, resulting in a smaller exchange surface for nutrition supply to the epidermis and further weakened ability of basal cell proliferation. This process of decreased proliferative ability of cells including keratinocytes, fibroblasts, and melanocytes is called cellular senescence. In skin samples from human donors of different ages, there was an age-dependent increase in the expression of senescence marker β -galactosidase in dermal fibroblasts and epidermal keratinocytes, indicating that aged skin contains more senescent cells. In addition, the dermis of photoprotected aged skin shows not only fewer mast cells and fibroblasts than photoprotected young skin but also rarefied collagen fibers and elastic fibers⁹. It is reported that the production of type I procollagen in intrinsically aged human skin is reduced likely because of downregulation of the TGF- β /Smad signaling and its downstream connective tissue growth factor, which is regarded as a regulator of collagen expression¹⁰. Moreover, evidence supports that in intrinsically aged skin, not only fibrous extracellular matrix components including elastin, fibrillin, and collagens but also oligosaccharide are degenerated, which in turn influences the ability of skin to retain bound water.

Changes in Extrinsic Aging:

As early as 1969, it was proposed that besides intrinsic factors, sun exposure also leads to skin aging¹². Exposure to UV radiation is the primary factor of extrinsic skin aging; it accounts for about 80% of facial aging¹³. In contrast to the thinner epidermis in intrinsically aged skin, UV-radiated epidermis thickens. As the outermost layer of the epidermis, stratum corneum is mostly affected and thickens because of failure of degradation of corneocyte desmosomes. The expression of differentiation marker involucrin in stratum corneum is increased, which is in accord with the fact that the differentiation process of epidermal keratinocytes is impaired by UV irradiation. In basal cells, the expression of cell-surface protein β 1-integrin, which interacts with extracellular matrix proteins and is regarded as one of the epidermal stem cell markers, is greatly reduced; indicating that proliferation in the aged basal keratinocytes is also impaired. The expression of type VII collagen in keratinocytes decreased in UV-radiated skin areas. Type VII collagen is the anchoring fibrils at the dermal-epidermal junction. The decrease in its production contributes to wrinkles due to the weakened connection between dermis and epidermis¹⁷. Studies have found that collagen type I diminishes in

photoaged skin^{18,19} due to increased collagen degradation. Various matrix metalloproteinases (MMPs), serine proteases, and other proteases participate in this degradation activity. For photoaged skin, a striking characteristic is the accumulation of abnormal elastic tissue deep in the dermis²³, a pathologic phenotype named solar elastosis. UV-irradiation elevates the expression of elastin by 4-fold, then elastolysis occurs, characterized by elastic fiber cleavage by proteases mentioned above, resulting in severe deposition of truncated elastic fibers^{4,24}. MMP-2, MMP-3, MMP-7, MMP-9, MMP-12, neutrophil serine proteases cathepsin G, and human leukocyte elastase are known to decompose elastin. Recent research has found that photoaging makes the N-terminal and central parts of the tropoelastin molecules more susceptible to enzymatic cleavage and, hence, accelerates the age-related degradation of elastin. Also, the function of the microvasculature declines with aging.

Molecular Mechanisms in Skin Aging:

Different models are proposed to explain the molecular basis for skin aging, including the theory of cellular senescence, decrease in cellular DNA repair capacity and loss of telomeres, point mutations of extranuclear mitochondrial DNA, oxidative stress, increased frequency of chromosomal abnormalities, single-gene mutations, reduced sugar, chronic inflammation, and so on¹¹. Some scientists proposed that most of the effects are caused by extrinsic factors, and only 3% of aging factors have intrinsic background²⁶. Here we highlight mainly important models and advances in molecular mechanism research on skin aging.

Treatments for Skin Aging:

Antioxidants:

Antioxidants as reducing agents can relieve skin aging by neutralizing ROS that have already formed. ROS activates MAPK pathway and subsequently increase MMP production that degrades collagen. This can be prevented by antioxidants such as vitamin C and vitamin E, or antioxidative enzymes, such as superoxide dismutase, catalase, glutathione peroxidase, and coenzyme Q10. Some plants can also be used as natural source of antioxidants, such as green tea and aloe vera⁶⁶. A recent example is that epigallocatechin gallate (EGCG), a kind of catechin in green tea, prevents skin aging via the epidermal growth factor receptor (EGFR) pathway in an aging mouse model, resulting in better skin structure than the control. Moreover, N-acetylcysteine, the precursor to the antioxidant glutathione, seems to be successful in the treatment of vascular and nonvascular neurological disorders as well as against

age-related decline in tissue regeneration, indicating its prospective anti-aging application in skin. However, it's notable that some researchers suggest that antioxidant supplements do not possess preventive effects to chronic diseases, and excessive supplementation of β -carotene and vitamins A and E is potentially harmful with unwanted side effects, especially in well-nourished populations, and the optimal source of antioxidants seems to come from our diet not from antioxidant supplements in pills or tablets. And a previous study found that EGCG induced significant death and DNA damage in human lung and skin normal cells through a reductive mechanism. The aim of antioxidant treatment is to restore oxygen homeostasis instead of completely eliminating all oxidants because they have their physiological functions. Thus, for necessary clinical application of antioxidants, the doctor should evaluate the status of the patient before giving a prescription. It's not desirable to completely inactivate all ROS, and antioxidant treatment seems to be beneficial for aging (including skin aging) only if the ROS level is reduced to those of healthy cells.

Stem Cell Therapy:

Stem cell transplantation is a promising therapy for the treatment of skin aging. Adipose tissue transplantation could improve skin quality at the recipient site in addition to increasing skin volume. Further experiments demonstrate that adipose-derived stem cells (ADSCs) contribute to the regeneration of skin during aging. In recent clinical tests, autologous fat grafting rejuvenates aging skin and enhances the volume of periocular and perioral skin in recipients with an average age of 50 years. Data show that ADSCs produce a series of growth factors, such as vascular endothelial growth factor (VEGF), basic fibroblast growth factor (bFGF), transforming growth factor (TGF)- β 1, TGF- β 2, hepatocyte growth factor (HGF), keratinocyte growth factor (KGF), platelet-derived growth factor AA (PDGF-AA), and placental growth factor (PGF), reminding us that ADSCs may influence surrounding cutaneous cells through these secretions. It seemed that ADSC may also transdifferentiate into epithelial stem cells that express epithelial stem cell marker p63 after fat grafting⁸¹. This work provides clues into the understanding of how fat grafts may rejuvenate overlying skin.

Retinoids:

Retinoids are chemically similar to vitamin A, and tretinoin is the first retinoid approved for clinical use. Topical application of tretinoin inhibits AP-1, thus suppressing the expression of MMPs and preventing the degradation of collagen. An increase in epidermal

thickness and anchoring fibrils is observed, and intrinsically aged skin may also benefit from the topical application of retinoids.

Hormone Replacement Therapy:

In addition to being used in the treatment of symptoms caused by menopause, hormone replacement therapy (HRT) is used to slow the skin aging process. HRT improve skin thickness, collagen content, and elasticity and it enhances hydration. However, there are studies suggesting that HRT increases the risk of developing breast cancer.

Diet Restriction:

Because it's still technically infeasible to reverse glycosylated proteins to their original state, currently the primary strategy still stays on the prevention of proteins from glycation. But the problem is that diet provides not only sugars such as glucose and fructose but also preformed AGEs, and the latter have a large amount in grilled, fried, or roasted food but very low content in foods prepared by water-based cooking such as boiling and steaming. Therefore, low-sugar food cooked with water would decrease the intake of preformed exogenous AGEs and endogenous production of physiologically glycosylated proteins. In the future, finding medicines of deglycation capability would be an expected breakthrough discovery.

Some scientists believe that some culinary herbs and spices, such as cinnamon, cloves, oregano, and allspice, can inhibit fructose-induced glycation, and some compounds, including ginger, garlic, α -lipoic acid, carnitine, taurine, carnosine, flavonoids (e.g., green tea catechins), benfotiamine, α -tocopherol, niacinamide, pyridoxal, sodium selenite, selenium yeast, riboflavin, zinc, and manganese, are also involved in the inhibition of AGE formation^{52,87-89}. More investigation is needed to further validate these findings and reveal their inhibitory mechanisms.

Antiprogeria Strategies

Currently, therapies targeting HGPS are mostly investigated. Because the farnesyl group in the mutant protein progerin was regarded as the predominant deleterious and toxic component, the original therapies are designed to inhibit the farnesylation process. Farnesyltransferase inhibitor lonafarnib was used in a clinical trial to treat 25 HGPS patients for 2 years, resulting in improved vascular stiffness, bone structure, and audiological status⁹¹. Another strategy using the combination of 2 compounds, statin and aminobisphosphonate, efficiently inhibited both farnesylation and

geranylgeranylation of progerin and prelamin A and markedly improved the aging-like phenotypes of Zmpste24-deficient progeria mice model including growth retardation, loss of weight, lipodystrophy, hair loss, and bone defects. A clinical trial using the same therapy was carried out, but the results are not published yet. A recent clinical trial combining lonafarnib with prenylation inhibitor pravastatin and zoledronic acid on 37 HGPS patients reveals additional bone mineral density benefit but no added cardiovascular benefit. Also other alternative therapies not targeting farnesyl group have been proposed in recent years. Mammalian targets of the rapamycin (mTOR) pathway inhibitor rapamycin treatment of HGPS fibroblasts reverses premature aging and the lobulated nuclei by increasing progerin clearance through macroautophagy-related pathways. After that, antioxidant sulforaphane is also found to enhance progerin clearance by autophagy and to reverse the cellular hallmarks of HGPS. In addition, a small molecule called remodelin was found to improve nuclear architecture, decrease DNA damage, and reverse cell proliferation defects in HGPS cells. More recently, retinoids were identified as a novel class of compounds that reverse aging phenotypes in HGPS patient skin fibroblasts in a high-throughput screening.

For HGPS patients, to gain a longer life span is the biggest priority. That's the reason why most work mentioned here wasn't aimed at skin specifically. Nevertheless, this work has provided possible hints for future research.

Anti-inflammaging

Given that the mechanism of skin inflammaging is far from being thoroughly understood, little progress is made to develop targeted treatments. Suh et al. reported that treatment of the human fibroblast cell line using UV-absorbing compound mycosporine-like amino acids (MAAs) suppressed cyclooxygenase-2 (COX-2) gene expression, which is typically increased in response to inflammation in skin⁹⁹. Moreover, the expressions of skin aging-related proteins elastin and procollagen C-proteinase enhancer, which is an important determinate of procollagen processing in the regulation of collagen deposition in the skin, are strongly suppressed after UV irradiation but restored after MAAs treatment to normal levels as in the control⁹⁹. Also, there are other reported anti-inflammaging additives, such as vitamins A, C, D and E, green tea, and so forth, that are already summarized It's noteworthy here that although some treatments may help to relieve skin aging, prevention of extrinsic aging from occurring is still the best approach, because skin wrinkles are formed mainly by changes in the dermal part of the

skin and there is still difficulty for antiaging agents in topical treatment to penetrate into deep dermis, although different delivery methods are developed.

Which essential oils help get rid of wrinkles?

While there are many commercial products available to reduce wrinkles, some people prefer natural alternatives, such as essential oils. As people age, the skin begins to break down and lose elasticity. This natural process causes wrinkles and fine lines to appear on the face around the forehead, mouth, and eyes. Although essential oils will not eliminate wrinkles completely, they may be able to reduce their appearance. They are also a natural alternative to chemical creams and lotions. In this article, discover some of the best essential oils for preventing and reducing the appearance of wrinkles.

Best essential oils for wrinkles:

i. Lemon

Lemon is well-known for its vitamin C content and potential health benefits for the immune system. However, lemon oils are also used in a variety of commercial skin care products to help reduce the signs of aging, such as wrinkles. Studies Trusted Source have found that lemon oil could help reduce the damage caused by oxidation. Lemon oil may also help prevent sun damage, which can lead to wrinkles. All citrus essential oils, including lemon and grapefruit, make the skin more sensitive to sunlight. It is essential to avoid sun exposure for several hours after using citrus essential oils, so it is wise to apply them before bed.

ii. Sandalwood

Early studies Trusted Source indicate that sandalwood may have anti-inflammatory properties. In addition to these properties, sandalwood may help restore moisture to the skin. When the skin is adequately hydrated, it may appear plumper and lessen the appearance of fine lines and wrinkles.

iii. Clary sage

Clary sage is a sweet-smelling herb related to the type of sage many people keep in their spice rack. Clary sage has been shown to have antioxidant effects. One study concluded that clary sage might help prevent DNA and proteins from being damaged by free radicals. Free radicals are chemicals believed Trusted Source to damage the skin.

iv. Pomegranate

Pomegranate is a complex fruit offering a variety of health benefits. People often use them in healthful foods and drinks as a nutrient-rich and tasty additive. A 2014 study Trusted Source concluded that

pomegranate oil could reduce oxidative stress, which may help prevent the formation of new wrinkles.

- When applied to the skin, pomegranate may also:
 - reduce the appearance of sunspots
 - stop the growth of cancer cells
 - reduce inflammation

v. Lavender

Lavender has a distinct, relaxing aroma. It is often used in aromatherapy and commercial bath products. There is a growing body of research looking at the potential health benefits of this popular plant. In a 2013 study Trusted Source, a research team studied the antioxidant effects of lavender. Their findings suggested that lavender oil helps protect against oxidative stress in the brain. These same effects may help reduce the appearance of wrinkles and fine lines when applied to the skin. However, more studies need to be conducted with humans to prove lavender oil's effectiveness. Some people are allergic to lavender. It is advised to do a patch test before applying any new substance to the skin.

Other ways to reduce wrinkles:

Here are many commercial products available to help reduce the appearance of wrinkles. These products include:

- moisturizers
- creams
- lotions

- mild soaps
- face masks

A person can also take steps to slow down the development of wrinkles. These steps include:

- avoiding smoking
- avoiding spending too much time in the sun
- staying hydrated
- eating foods that are rich in antioxidants

DRUG PROFILE:

Lavender:

Botanical name: *Lavandula angustifolia* **Family:** *Lamiaceae.*

Lavandula (common name lavender) is a genus of 47 known species of flowering plants in the mint family, Lamiaceae. It is native to the Old World and is found in Cape Verde and the Canary Islands, and from Europe across to northern and eastern Africa, the Mediterranean, southwest Asia to India.

Chemical constituent:

Some 100 individual phytochemicals have been identified in lavender oil, including major contents of linalyl acetate (30–55%), linalool (20–35%), tannins (5–10%), and caryophyllene (8%), with lesser amounts of sesquiterpenoids, perillyl alcohols, esters, oxides, ketones, cineole, camphor, beta-ocimene, limonene, caproic acid, and caryophyllene oxide. The relative amounts of these compounds vary considerably among lavender species.



Fig. No 04 - *Lavandula angustifolia*

Uses:

A research team studied the antioxidant effects of lavender. Their findings suggested that lavender oil helps protect against oxidative stress in the brain.

These same effects may help reduce the appearance of wrinkles and fine lines when applied to the skin. However, more studies need to be conducted with humans to prove lavender oil's effectiveness.

Lavender oil gently moisturizes skin, and is non-comedogenic for pores. Lavender oil is naturally antibacterial, meaning that it kills acne-causing bacteria that might infiltrate your pores. This makes the purple flower perfect for preventing, calming, and healing painful acne breakouts.

Rose:



Fig. No 05 - *Rosa rubiginosa*

Chemical constituent:

In the petals of *Rosa rugosa*, four anthocyanins have been identified: cyanidin 3,5-di-O-glucoside, peonidin 3-O-sophoroside, peonidin 3,5-di-O-glucoside, and peonidin 3-O-glucoside, of which the predominant peonidin 3,5-di-O-glucoside represented approx. 85% of all the determined anthocyanin compounds.

Uses:

It's not only a rich source of antioxidants but the rose oils also offer plenty of vitamins A and C. Altogether, these elements offer anti-ageing properties. Regular use of rose water will tighten your skin due to the presence of collagen within the rose water. Hence, wrinkles will be minimized.

SUMMARY AND CONCLUSION:

Rose and Lavender tops the list of herbs for fighting visible signs of ageing on your skin. It is the new anti-ageing super food that can help you in your fight against wrinkles. Topical application of Rose and Lavender can prove beneficial in retaining the moisture and hydration of the skin, reduce roughness, and give a smooth texture to the surface.

Botanical name: *Rosa rubiginosa* **Family:** *Rosaceae*:

A rose is either a woody perennial flowering plant of the genus *Rosa* (/ˈrouzə/), in the family Rosaceae or the flower it bears. There are over three hundred species and tens of thousands of cultivars.[citation needed] They form a group of plants that can be erect shrubs, climbing, or trailing, with stems that are often armed with sharp prickles.

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CONFLICTS OF INTEREST:

Authors have no conflicts of interest to declare.

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