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REVIEW ON ACTIVITY OF GINGER (ZINGIBER OFFICINALE ROSCOE) ON FACE

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ABSTRACT

In this rapidly changing world Skin-care has become an essential part of everyone's daily routine, there are various types of cosmetic products present in the market but face serum is the best way to provide the skin with a rare active ingredient, do away with harmful additives, and get quick results. In comparison to creams, serums or concentrates contain roughly 10 times more biologically active ingredients, making it possible to treat skin issues more effectively. This article focuses on the use of ginger in skin care as a face serum. Ginger is a natural ingredient known for its antioxidant, anti-inflammatory, and antibacterial properties and is used in skin care for various purposes. This article examines the properties of ginger and its effects on the skin. It explains how ginger soothes and calms irritated skin, increases collagen production, and brightens the complexion. It reduces inflammation, increases elasticity, and increases radiance, among other ginger benefits for the skin. concludes with a summary of the potential benefits of using ginger. on the face in skin care, indicating its importance as a natural ingredient in skin care routines.

Keywords – Ginger, skin health, antioxidant, anti-inflammatory, antimicrobial, anti-aging, skincare, dermatological conditions

I. INTRODUCTION

Skin care has become an essential part of everyone's daily routine, even males, thanks to the public's awareness of perfect and attractive skin. According to statistics, the worldwide skincare market is anticipated to reach a value of USD 180 billion by 2024 (Statistics, 2018). A proper skin care regimen can enhance skin structure and function in addition to maintaining skin health (Ganceviciene et al., 2012). According to Neil (2012) and Keefe et al. (2004), a basic skin care regimen comprises the use of a cleanser, toner, treatment mask, eye cream, face serum, moisturizer, sunscreen, and night cream. Customers are more drawn to items that promise fast results when trying to get beautiful skin. This makes it simple to include hazardous substances like mercury and hydroquinone. Bleaches are dangerous elements because they lighten the melanin on the skin's surface (Katsambas and Stratigos, 2001). As a result, serious adverse effects were experienced, such as skin irritability, chemical burns, exogenous skin ochronosis, contact dermatitis, cancer (leucomelanoderma), and even mutagenicity (FDA, 2017; Dadzie and Petit, 2009). 2 On the other hand, numerous studies on plant-derived active compounds have been carried out to offer a safe cosmetic option for cosmetic products (Hassan et al., 2015; Gupta and Jain, 2011; Huang et al., 2011). In order to serve its intended purpose, a skincare product must also be able to deliver a powerful agent to the skin. The face serum is the best way to provide the skin with a rare active ingredient, do away with harmful additives, and get quick results. Face serum, according to Sasidharan et al. (2014), is a highly concentrated emulsion that comes in both oil and water bases. In comparison to creams, serums or concentrates contain roughly 10 times more biologically active ingredients, making it possible to treat skin issues more effectively. Within a month or earlier, adding a few drops of facial serum to your daily skin care regimen will yield noticeable improvements (Herman-Axel, 2014; Sasidharan et al., 2014). This is due to the fact that facial serums include tiny molecules that enable them to quickly enter deep within the skin (Sasidharan et al., 2014). According to Herman-Axel (2014), the serum is packed with a range of healthy nutrients and active components, including antioxidants, ceramides, amino acids, and more. The face serum being the most expensive product in the skin care kit makes sense in light of this (Herman-Axel, 2014).

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II. TYPES OF FACE SERUM

1. Anti-aging serum-Most people know about face serums that have incredible anti-aging properties. The most common signs of aging can be treated with these serums and the aging process can be slowed down. It can firm and plump skin while focusing on existing fine lines, sagging, and wrinkles. Anti-aging serums also focus on boosting cell regeneration, cell repair, and cell turnover. This improves the overall appearance and texture of the skin while helping to regenerate it. Retinol, a derivative of vitamin A, is a popular ingredient known for its powerful anti-aging properties that tighten, moisturize, and plump skin.

2. Skin-lightening serum- The ability of facial serum to revive dull skin is another important selling point. The lightening serum evens skin tone, reduces pigmentation, removes age spots and dark spots, and smoothness the skin. Your skin will be bright and natural. These special serums may contain antioxidants like vitamin E and vitamin C, or extracts from things like grapefruit, licorice root, green tea, and licorice. Kojic acid, ferulic acid, peptides, and a light diffuser are other ingredients that help give you instant, flawless radiance.

3. Anti-acne serum-Anti-acne serums are made to end pesky breakouts once and for all. When pimples are knee-deep, we often use reactive acne treatment methods – in fact, the goal is to stop pimples before they start. Serums are good at achieving that. The small molecules used in the formulation are able to deliver strong active ingredients deep into the skin. On the other hand, cleansers and creams affect the surface of the skin. Serums can be used to prevent acne breakouts before they start. It also helps lighten blemishes while gently removing the build-up of dead skin cells. Absorbs sebum and minimizes pores, inflammation, and redness.

4. Facial moisturizing serum-If your skin is dry and dehydrated, you may run out of moisturizer and lotion. Facial serums can help in this situation. However, facial serums should not be used in place of your daily moisturizer. Working together, they increase the moisturizing properties of the moisturizer. These special facial serums give you a layer of moisture by penetrating deep into the skin pores. Moisturizers help seal in these healthy ingredients, so apply them after your serum. Vera, rosehip oil, ceramides, rose water, seaweed, jojoba, and vitamin E help quench your skin's thirst.

5. Exfoliating facial serum-Exfoliation has a special place in our skin care regimen because it has so many benefits for the skin. Exfoliating serums even out skin tone, reduce fine lines and wrinkles, and treat pigmentation and discoloration caused by sun damage and aging. It produces less elastin and is much less effective at removing dead skin cells. The accumulation of dead skin cells creates layers. As a result, the skin becomes dull, dry, and cracked. It does not absorb effectively, making it more prone to irritation, providing insufficient protection, and making other cosmetics less effective. Retinol and enzymes from plant and fruit extracts, citric acid is an important ingredient in exfoliating facial serums.

6. Repair and regeneration use of face serum-Facial serums work to heal and rejuvenate the skin as well as fight aging. Essentially, facial serums can turn back time and give you back the radiant youth we all long for. You have the smooth, glowing skin that we all took for granted in our teens and early twenties. Our faces are those of a soldier who endures day after day, year after year, bearing respectable battle scars.

III. INTRODUCTION OF GINGER

Since ancient times, ginger (Zingiber officinale Roscoe), a bulbous plant, has been grown. Ginger is said to have its origins in southern China, Southeast Asia, and India. In the first century, it was brought to the Mediterranean, in the third century to Japan, in the fourth century to England, and in the eleventh century to England and America [1]. Today, it is widely grown throughout the world's tropical and subtropical climates, mostly in Asia and Africa. More than 21,000 hac are used to harvest ginger globally, with a total annual production of more than 200,000 tones and an average yield of 10,000 kg per hac. Ginger is mostly used in cuisine as a spice and flavoring. The distinctive flavor and aroma of ginger are the consequence of volatile oils, with the most pungent compounds being zingerone, shogaols, and gingerols. Numerous investigations have been conducted to uncover this plant's wonder. The history of ginger cultivation, its medicinal properties, current cultivation and production, varieties, and breeding will all be covered in the book.

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Figure 1: ginger

table 1. 1 Introduction of ginger

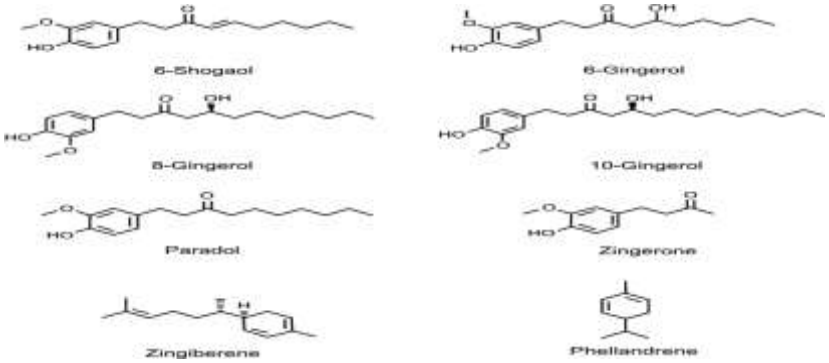
Synonyms	Zingiber, Rhizoma Zingiberis
Biological source	The rhizomes of the plant Zingiber officinale Roscoe are used to produce ginger, which is a kind of oleo gum resin.
Family	Zingiberaceae
Geographical source	It is native to South East Asia and is grown in India, Jamaica, the Caribbean, Australia, Mauritius, Taiwan, and Africa.

Macroscopical Characters of Ginger:

Colour	Buff or earthy brown.
Odour	Characteristic, Agreeable and Aromatic.
Taste	Pungent.
Size	Rhizomes range in size from 5 to 15 cm and from 2 to 6 cm..
Shape	Rhizomes bear short, flat, oval branches that bud at the tip and are laterally compressed.
Shape	Fibrous, short.

IV. CHEMICAL CONSTITUENTS

It includes things like volatile oil, fat, starch, moisture, fibers, and inorganic substances. Monoterpene and sesquiterpene hydrocarbons, oxygenated terpene derivatives, and phenylpropanoids are all found in the oil. The medicine also contains the following compounds: geranial, citral, zingiberene, sesquiphellandrene, curcumene, bisabolene, and farnesene. Volatile oils in ginger give it its distinctive scent, while phenolic ketones, such as Zingerone, gingediols, paradols, shogaols, o-methyl ethers, and hexahydrocurcumin, give it its pungency and medicinal properties.



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Antioxidant properties of ginger:

Oxidative stress is known to contribute to skin aging and a number of dermatological diseases. It is brought on by an imbalance between the body's antioxidant defense mechanisms and the creation of reactive oxygen species (ROS). Ginger has been discovered to have strong antioxidant capabilities, which may aid in preventing oxidative damage to the skin. Numerous studies have shown that ginger has antioxidant properties in both in vitro and in vivo scenarios. For instance, studies on ginger extract have revealed that it can reduce ROS, prevent lipid peroxidation, and boost the activity of antioxidant enzymes in skin cells such as superoxide dismutase (SOD) and catalase. These anti-oxidant qualities of ginger may assist in reducing oxidative stress, neutralizing ROS, and avoiding environmental skin damage.

Anti-inflammatory Properties of Ginger:

Inflammation is a key component of many skin conditions, such as acne, dermatitis, and psoriasis. Ginger has been reported to exhibit anti-inflammatory properties, which may help alleviate inflammation in the skin. Ginger contains various bioactive compounds that have been shown to inhibit the production of pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF-α), interleukin-6 (IL-6), and interleukin-1 beta (IL-1β), in skin cells. These compounds have also been shown to inhibit the activation of nuclear factor-kappa B (NF-κB), a transcription factor that plays a central role in the inflammatory response. ginger has been reported to inhibit the expression of cyclooxygenase-2 (COX-2), an enzyme involved in inflammation, and reduce the production of prostaglandins, which are inflammatory mediators. These anti-inflammatory effects of ginger may help reduce inflammation in the skin, alleviate symptoms of inflammatory skin conditions, and promote overall skin health.

Antimicrobial Properties of Ginger:

Ginger has also been found to exhibit antimicrobial properties, which may have positive effects on various skin conditions caused by microorganisms, such as bacteria, fungi, and viruses. Ginger has been reported to possess broad-spectrum antimicrobial activity against various pathogens, including Staphylococcus aureus, Propionibacterium acnes, Candida albicans, and herpes simplex virus. The antimicrobial properties of ginger are attributed to its bioactive compounds, such as gingerols and shogaols, which have been shown to disrupt the cell walls of microorganisms, inhibit their growth, and suppress the production of virulence factors. These antimicrobial effects of ginger may help prevent skin infections, reduce inflammation associated with microbial infections, and contribute to overall skin health.

Anti-aging Properties of Ginger:

Skin aging is a natural process characterized by the loss of collagen, elastin, and hyaluronic acid, which results in the formation of wrinkles, sagging skin, and other signs of aging. Ginger has been reported to possess anti-aging properties, which may help slow down the aging process and maintain youthful-looking skin. Ginger has been found to stimulate collagen synthesis, increase the production of hyaluronic acid, and inhibit the activity of enzymes, such as matrix metalloproteinases (MMPs), which degrade collagen and elastin in the skin. Ginger also exhibits antioxidant properties, as mentioned earlier, which help neutralize ROS and reduce oxidative stress, thereby protecting the skin from premature aging. Additionally, ginger has been reported to improve skin elasticity, firmness, and moisture content, as well as reduce the appearance of wrinkles and fine lines in clinical studies. These anti-aging effects of ginger may contribute to its potential use in skincare products and promote healthy, youthful-looking skin

Mechanisms of Action of Ginger on the Skin:

The mechanisms of action of ginger on the skin are multifaceted and involve various molecular, cellular, and biochemical pathways. Ginger has been shown to modulate gene expression, regulate signaling pathways, and interact with skin cells to exert its effects on skin health.For example, ginger has been found to regulate the expression of genes involved in inflammation, oxidative stress, and skin aging, such as NF-κB, mitogen-activated protein kinases (MAPKs), and collagen-related genes. Ginger has also been reported to modulate the production of various cytokines, enzymes, and other molecules involved in skin health, such as COX-2, MMPs, and transforming growth factor-beta (TGF-β). ginger has been shown to interact with skin cells, including keratinocytes, fibroblasts, melanocytes, and immune cells, and influence their functions. Ginger has been reported to stimulate cell proliferation, migration, and differentiation, as well as inhibit apoptosis (programmed cell death) in skin cells. These interactions between ginger and skin cells may contribute to its beneficial effects on skin health.

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Ginger used in face serum:

A skincare product called ginger face serum uses ginger extract as its major component. Ginger extract is well recognized for its antioxidant qualities, which aid in shielding the skin from oxidative stress and the early aging brought on by free radicals. Additionally, it possesses anti-inflammatory characteristics that are advantageous for sensitive or acne-prone skin since they help calm inflamed skin and lessen redness and irritation. Additionally, ginger has anti-aging properties since it helps increase collagen formation, which increases the skin's suppleness and firmness and minimizes the look of wrinkles and fine lines. Ginger extract is often diluted with carrier oils, such as jojoba oil or rosehip oil, which nourish the skin and aid in moisture retention, to create ginger face serum. Additional essential oils may be used. based to personal tastes, for extra skincare advantages and fragrance. Depending on the user's preferences, skin type, and preferred consistency, the precise composition and component ratios may change. Conduct a patch test and speak with a dermatologist or skincare expert before introducing ginger face serum into your skincare regimen, especially if you have sensitive skin or pre-existing skin issues. This will reduce the possibility of any negative reactions and assist guarantee that the product is suited for your skin. In conclusion, ginger face serum is a natural skincare product that has a number of skin-friendly properties, such as antioxidant defense, anti-inflammatory properties, anti-aging properties, moisturization, and brightening/even-toning properties. But it's crucial to be cautious, carry out a patch test, and get expert guidance before using a face serum

V. CONCLUSION

The skin on the face is the most exposed and sensitive area on the body. For this reason, when skincare products are made and prescribed for this skin area, extra caution needs to be taken. Face serum is one skincare product that is causing a rave and making waves in the beauty industry. This quick and deep absorption of active ingredients is the bedrock of all the benefits that your skin enjoys. Buy the right face serum and use it as you should, in the right order and frequency. Although the medicinal properties of ginger have been known for thousands of years, a significant number of in vitro, in vivo, and epidemiological studies further provide substantial evidence that ginger and its active compounds are effective against wide variety of human diseases. Ginger has anti-microbial properties, and anti-oxidant properties which use in treatment of acne also ginger help to reduce pores and fades scar on face.

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