Active Ingredients in Skin Care Products

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Plastic Surgeon

Active and Inactive Ingredients

- **Active ingredients** are the components in a cosmetic formulation that produce a biological effect or a targeted benefit on the skin.
- For example, retinol stimulates collagen production to reduce wrinkles, while salicylic acid exfoliates the skin and treats acne.
- Active ingredient have defined mechanisms of action, measurable effects, and often must be used within specific concentrations to maintain both efficacy and safety.

Active and Inactive Ingredients

- **Inactive ingredients, on the other hand, do not directly cause biological changes in the skin. Instead, they support the function, texture, stability, or delivery of the active ingredients.**
- **Examples include emollients, preservatives, emulsifiers, thickeners, and solvents.**
- **For instance, water acts as a solvent, glycerin as a humectant, and preservatives prevent microbial growth.**

Role of Active Ingredients in Skin Care Formulations

- Targeting specific skin concerns.
- Modulating cellular and biochemical processes.
- Improving skin barrier function.
- Enhancing long-term skin health.
- The effectiveness of active ingredients depends on several factors, including their molecular size, concentration, formulation type, skin penetration ability, and PH environment.

Classification of Active Ingredients in Skin Care Products

1. Moisturizing Agents

A- Humectants

Prototypes: Glycerin, Hyaluronic Acid (HA), Propylene Glycol, urea and sorbitol.

Hyaluronic Acid

Mechanism of Action

1. Water Retention (Humectant Effect):

- HA can bind up to 1,000 times its own weight in water.
- When applied topically, it draws moisture from the environment and from the deeper skin layers (the dermis) into the outer layer (the stratum corneum).
- This plumps the skin and smooths fine lines.

2.Barrier Function Support:

- By maintaining hydration, HA helps stabilize the skin’s lipid barrier.
- A strong barrier reduces transepidermal water loss (TEWL), keeping the skin supple and protected from irritants and pollutants.

3.Cell Signaling and Repair:

- On a cellular level, HA interacts with receptors like CD44 and RHAMM, which influence cell proliferation, migration, and wound healing.
- This is why it’s also used in regenerative dermatology and after aesthetic procedures

4.Molecular Weight Matters:

- High-molecular-weight HA stays on the surface, forming a hydrating film.
- Low-molecular-weight HA can penetrate deeper, improving long-term hydration and stimulating repair mechanisms.
- Very low-molecular-weight HA may even modulate inflammation and improve skin elasticity.

Uses in Skin Care

1.Moisturizers and Serums: HA is a cornerstone of hydrating formulas. It gives instant plumping and softness, often paired with ceramides or glycerin for synergistic hydration.

2. Anti-aging Products: Because hydrated skin looks firmer and smoother, HA reduces the appearance of wrinkles. It's often combined with retinoids or peptides to enhance firmness and repair.

3. Post-procedure Care: After chemical peels, laser therapy, or microneedling, HA-based gels help speed recovery and minimize irritation.

4. Injectable Fillers: In dermatology and aesthetic medicine, *cross-linked HA* is used as a dermal filler to restore volume in areas like lips, cheeks, and nasolabial folds. The same water-retaining principle provides structural lift.

5. Sheet Masks and Eye Gels: These rely on HA's film-forming and moisture-locking properties for temporary plumping and soothing effects.


Hyaluronic Acid 2% + B5
Before
After
Skin Hydration
Wrinkles
Sun Burn


HYALURONIC ACID
LA ROCHE-POSAY
LABORATOIRE DERMATOLOGIQUE
HYALU B5
SERUM
ANTI-AGING CONCENTRATE
REPAIRING REPLUMPING
PURE HYALURONIC ACID
VITAMIN B5, MADECASSOSIDE
LA ROCHE-POSAY
THERMAL SPRING WATER


Isntree
| 10 types of hyaluronic acid
| Deep moisturizer
| Balances Oil & Moisture
HYALURONIC ACID
MOIST
CREAM
100ml / 3.38 fl oz

B-Occlusive

1.Hydrocarbons (Petrolatum (Vaseline)), Mineral Oil, Paraffin)

- Extremely effective, inert, and non-irritating. Petrolatum can reduce TEWL by up to 99%. Often used in healing ointments and for very dry, cracked skin. Can feel very greasy.

2. Silicones (Dimethicone, Cyclomethicone, Amodimethicone)

- Provide a smooth, silky feel, are non-greasy, and often non-comedogenic. They fill in fine lines and pores, creating a smooth canvas. Common in primers, serums, and moisturizers for normal/oily skin.

3.Plant Oils & Butters (Jojoba Oil, Shea Butter, Cocoa Butter, Squalane)

- Natural & Multi-functional.
- Provide occlusive benefits along with emolliency and sometimes even nourishing fatty acids. Heavier butters (like shea) are more occlusive than lighter oils (like rosehip). Popular in "clean" beauty products.

4.Lanolin & Derivatives Lanolin, Lanolin Alcohol

- Derived from Sheep's Wool.
- An excellent, potent occlusive similar to human sebum.
- Highly effective but a potential allergen for some. Often used in nipple creams and medical-grade skin protectants.


arifoğlu
Soğuk Sıkım
Shea Butter
Karite Yağı
Butyrospermum Parkii
Mouisturizing Butter For Face&Body


كريم جليسوليد
GLYSOLID
GLYCERIN CREAM
كريم جليسوليد
GLYSOLID
GLYCERIN CREAM


AUSTRALIAN
Lanolin Oil
MOISTURISING CREAM
with Vitamin E
NEW
gentle
FORMULA


CeraVe
Moisturizing Cream
Crème hydratante
CeraVe
DEVELOPED WITH DERMATOLOGISTS
DÉVELOPPÉ AVEC DES DERMATOLOGUES
Moisturizing Cream
FOR NORMAL TO DRY SKIN
Crème hydratante
POUR PEAU NORMALE À SÈCHE
With ceramides and hyaluronic acid
Avec céramides et acide hyaluronique


Vaseline
Repairing Jelly
100% Pure | Original
Dermatologist Tested
PETROLEUM
REPAIRING JELLY

Uses and Benefits of occlusives

1.Treating Dry & Dehydrated Skin:

This is the primary use. Occlusives are essential for restoring the skin's barrier and preventing moisture loss in conditions like xerosis (extremely dry skin).

2. Managing Skin Conditions:

Eczema & Psoriasis: They are a cornerstone of treatment, helping to protect the compromised skin barrier, reduce itching, and prevent flare-ups. o Dermatitis: Used to protect skin from irritants (like in diaper rash creams).

3. Healing Wounds & Cracks:

By creating a moist wound-healing environment, occlusives like petrolatum accelerate the repair of minor cuts, scrapes, and cracked heels.

Uses and Benefits of occlusives

4. Enhancing the Efficacy of Other Products (The "Slugging" Method):
Applying a thin layer of a pure occlusive (like petrolatum) as the last step of a nighttime routine over serums and moisturizers. This "slugs" everything in, maximizing hydration and the penetration of active ingredients.

5. Preventing Irritation from Actives:

Using an occlusive around the eyes, nostrils, and mouth can create a protective barrier to prevent irritation from potent ingredients like retinoids or chemical exfoliants (a technique called "buffer framing").

6. Improving Skin Texture & Feel:

Silicones, in particular, provide an immediate smoothing effect, making skin feel soft and look more refined. This is why they are ubiquitous in primers.

Important Considerations

1.Not for Everyone:

- Occlusives can be too heavy for very oily or acne-prone skin and may lead to clogged pores and breakouts.
- It's crucial to choose non-comedogenic options (like squalane or dimethicone) if you are prone to acne.

2.Layering is Key:

For best results, apply them as the final step in routine: Cleanser -> Toner/Essence -> Humectants (serums) -> Emollients (light moisturizers) -> Occlusives (heavy cream/ointment).

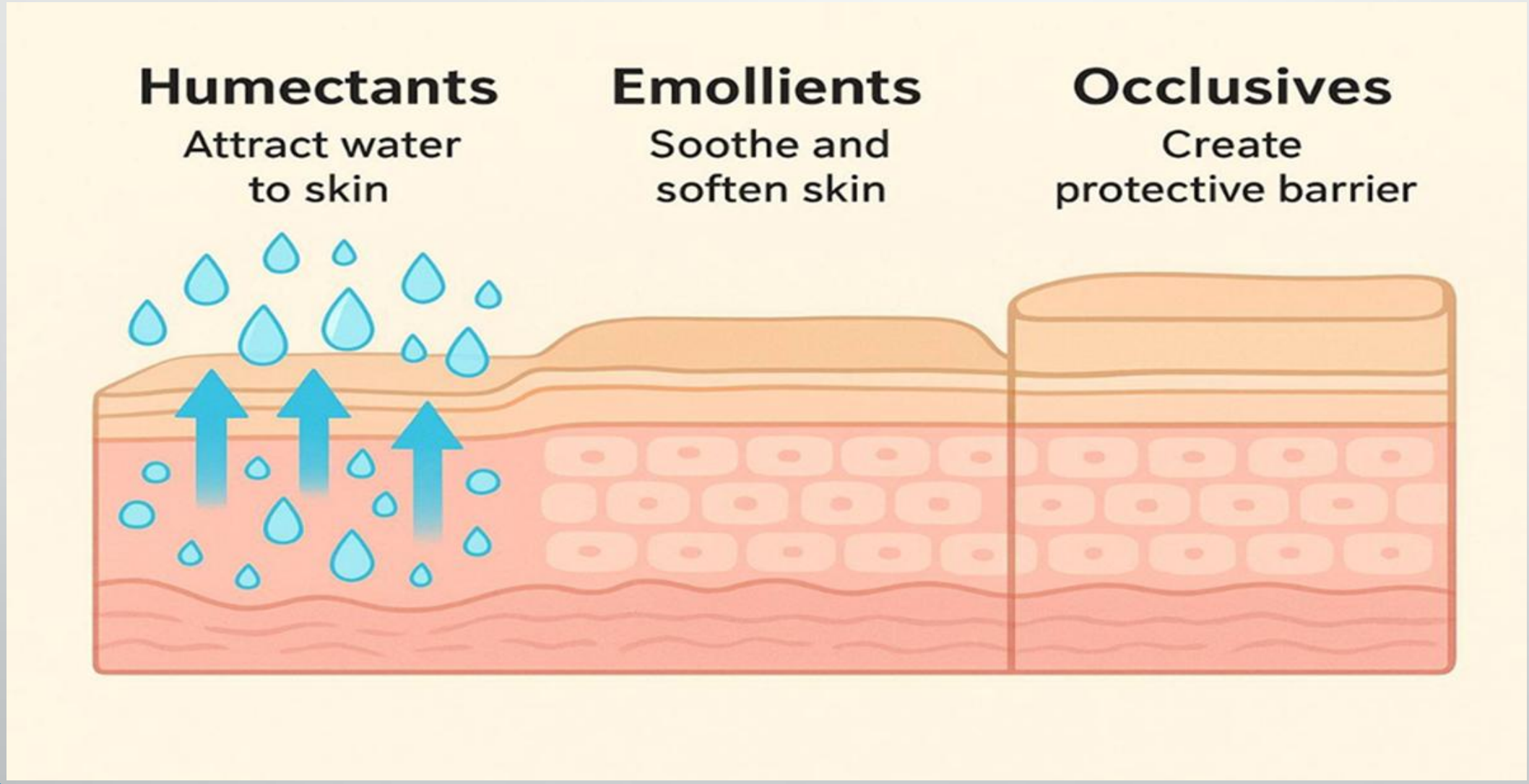
3.They Don't Moisturize:

Remember, they only prevent water loss. They do not add water to the skin. Always pair them with hydrating (humectant) products.

C- Barrier lipids and Emollients

- **Prototypes:** Ceramides, Cholesterol, Fatty Acids (e.g., Linoleic Acid).
- **Mechanism of Action:** These are the fundamental building blocks of the skin's lipid matrix. They fill the spaces between corneocytes, restoring the "brick and mortar" structure of the skin barrier. This prevents Transepidermal Water Loss (TEWL).
- **Clinical Application:** Essential in treating conditions like atopic dermatitis, xerosis, and a compromised skin barrier.


REVUELE
Ceramide
Moisturizing Lotion
For dry to very dry skin
Ceramides and Hyaluronic Acid
Loción Hidratante
Para piel seca a muy seca
Ceramidas y Ácido Hialurónico


Humectants
Attract water to skin
Emollients
Soothe and soften skin
Occlusives
Create protective barrier

2. Exfoliating and Keratolytic Agents

Alpha Hydroxy Acids (AHAs):

- **Prototypes**: Glycolic Acid (from sugarcane), Lactic Acid (from milk).
- **Mechanism of Action:** AHAs are water-soluble. They function by weakening the ionic bonds (corneodesmosomes) that hold dead skin cells (corneocytes) together in the stratum corneum.
- This is a chemo-exfoliant action. At higher concentrations (>20%), they induce epidermolysis, effectively peeling the skin.

Clinical Applications

- **Glycolic Acid:** Due to its small molecular size, it penetrates effectively. Used for fine lines, mild hyperpigmentation, and improving skin texture.
- **Lactic Acid:** A larger molecule, slightly more gentle, and a natural component of the Natural Moisturizing Factor (NMF), providing humectant properties.

Beta Hydroxy Acid (BHA)

- **Prototype:** Salicylic Acid.
- **Mechanism of Action:** Salicylic Acid is lipid-soluble. This allows it to penetrate into the pilosebaceous unit (pores), where it dissolves the intercellular "cement" between corneocytes. It is also comedolytic and anti-inflammatory.
- **Clinical Applications:** Primarily used for acne-prone and oily skin due to its ability to exfoliate within the pore and reduce comedones.

3. Skin-Lightening Agents

- These target the multi-step process of melanogenesis to reduce hyperpigmentation

1. Hydroquinone

- **Mechanism of Action:** It inhibits the enzyme tyrosinase, thereby preventing the conversion of tyrosine to melanin. It may also be cytotoxic to melanocytes.
- **Safety:** Its use is controversial and banned in some countries due to concerns about exogenous ochronosis (blue-black discoloration) with long-term, high-concentration use.

2. Tyrosinase Inhibitors:

- **Kojic Acid (from fungi):** A chelator of copper, which is required for tyrosinase activity.
- **Arbutin (from bearberry):** A natural derivative of hydroquinone with a more favorable safety profile.
- **Tranexamic Acid:** Works by inhibiting the interaction between melanocytes and keratinocytes (via the plasminogen pathway), and is particularly effective for melasma.
- **Azelaic acid:**

  Antimicrobial and tyrosinase-inhibiting properties.

  Use: Melasma, rosacea, mild acne.
- **Niacinamide (Vitamin B3):** Reduces melanosome transfer to keratinocytes. Additional benefit: Anti-inflammatory and barrier repair effects.

4. Antioxidants

- **These molecules neutralize free radicals (Reactive Oxygen Species - ROS) generated by UV exposure and pollution, which cause oxidative stress and damage DNA, proteins, and lipids. And theses can lead to aging and inflammation.**

1. L-Ascorbic Acid (Vitamin C)

- **Mechanism of Action:** As the primary water-soluble antioxidant in the skin, it donates electrons to neutralize free radicals. It is also an essential cofactor for the enzymes lysyl and prolyl hydroxylase, which are required for collagen synthesis. It also inhibits the enzyme tyrosinase, impacting melanogenesis.
- **Formulation Challenge:** It is highly unstable, oxidizing rapidly when exposed to light and air. Effective formulations are typically at a low PH (<3.5) and in opaque, airtight packaging.

2. Vitamin E (Tocopherol).

- **Mechanism of Action:** The primary lipid-soluble antioxidant in the skin, protecting cell membranes from peroxidation. It often works synergistically with Vitamin C, which can regenerate oxidized Vitamin E.

3. Niacinamide (Vitamin B3).

- **Mechanism of Action:** A remarkably versatile ingredient. It improves the skin barrier by stimulating ceramide synthesis. It inhibits the transfer of melanosomes from melanocytes to keratinocytes, reducing hyperpigmentation. It also has anti-inflammatory properties beneficial for acne and rosacea


AYURVEDA
VITAMIN E OIL
100% PURE
زيت فيتامين E
30 ml
AYURVEDA
VITAMIN E OIL
زيت فيتامين E
30 ml


Balance Oil Production
Balance Oil Production: Licorice Root Serum For Face contains 10% vitamin B3 with natural, soothing properties that actively work to regulate your skin's sebum production and effectively reduce breakouts, blemishes, irritation.
DR.DAVEY
Fluid Extract
Licorice Root
Calms Inflammation Serum
18,000 PPM
EXTRA BRIGHTENING
• NON GMO
• ALCOHOL FREE
How to Use it ?
• Apply the Serum to your skin.
• Softly spread all over your face.
• The Serum will gently absorb into your skin.


LA ROCHE-POSAY
LABORATOIRE DERMATOLOGIQUE
VITAMIN C
SERUM
CONCENTRÉ ANTI-RIDES RÉNOVATEUR ANTI-OXYDANT
ANTI-WRINKLE CONCENTRATE RENOVATING ANTIOXIDANT
PURE VITAMIN C 10%
AVEC DE L'EAU THERMALE DE LA ROCHE-POSAY

4. Coenzyme Q10

- **Mechanism:** Naturally occurs in the skin and declines with age; helps to neutralize free radicals and support cellular regeneration.
- **Benefits:** Reduces the appearance of wrinkles and protects against oxidative stress.


Nature's Lab
GOLD
BREAKTHROUGHS FOR LIFE
CoQ10
with Alpha Lipoic Acid
and Acetyl L-Carnitine
Supports Heart & Cognitive Health†
60
DIETARY SUPPLEMENT
Alpha Lipoic Acid
Alpha Lipoic Acid is an antioxidant made by the body. It has been shown to combat free radicals, thus making it work more efficiently throughout the body including the heart.†
Co-enzyme Q10
Coenzyme Q10 is a powerful fat soluble antioxidant compound made naturally in the body through the cells. CoQ10 has been shown to support the body's energy production.†
Acetyl L-Carnitine
Acetyl L-Carnitine functions as an antioxidant and promotes the production of glutathione, a free radical scavenger, in cells.†

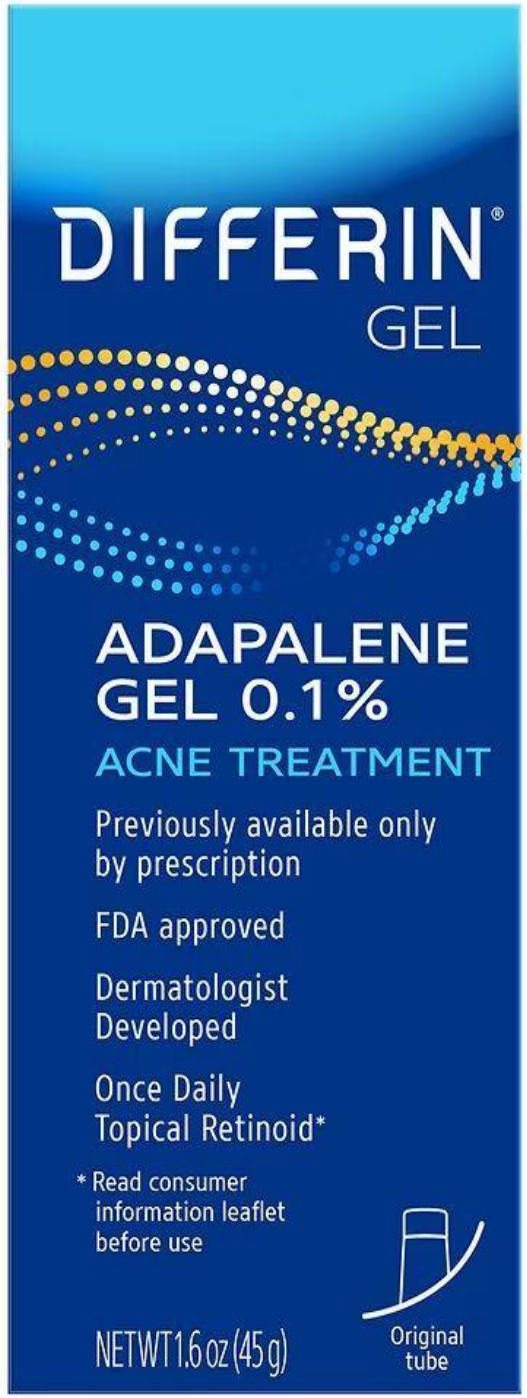
5. Retinoids

- **Prototypes:** Retinol (OTC), Retinaldehyde, Retinoic acid (Tretinoin)(Rx), Adapalene (Rx/OTC).
- **Mechanism of Action:** This is a profound class. Retinoids are vitamin A derivatives that bind to nuclear retinoic acid receptors (RARs and RXRs) in the skin. This binding acts as a transcription factor, modulating gene expression.
- **The effects are multi-modal:** Increased Cellular Turnover: Accelerates the shedding of old cells and promotes the generation of new keratinocytes. Stimulation of Collagen & Elastin: Downregulates collagenase (MMP-1), preventing collagen breakdown, and upregulates procollagen synthesis. Normalization of Follicular Epithelium: Prevents the hyperkeratinization that leads to microcomedones
- **Clinical Applications:** The gold standard for photoaging, acne vulgaris, and some forms of hyperpigmentation.
- **Adverse effects:** Irritation, erythema, teratogenicity (systemic forms).


CeraVe®
DEVELOPED WITH DERMATOLOGISTS
Resurfacing Retinol Serum
Reduces the appearance of post-acne marks and pores
Helps restore the protective skin barrier & improves skin smoothness
With 3 essential ceramides, licorice root extract & niacinamide
ENCAPSULATED RETINOL
1 FL OZ (30 ml)
CeraVe®
DEVELOPED WITH DERMATOLOGISTS
Resurfacing Retinol Serum
With 3 essential ceramides, licorice root extract & niacinamide
ENCAPSULATED RETINOL
1 FL OZ (30 ml)


جمجوم فارما
Jamjoom Pharma
Acretin™ 0.05%
Tretinoin 0.05% w/w
For ACNE Treatment
Cream
30 g


Jamjoom Pharma
Acretin™ 0.025%
جمجوم فارما
Jamjoom Pharma
Acretin™ 0.025%
Tretinoin 0.025% w/w
For ACNE Treatment
Cream
30 g


DIFFERIN®
GEL
ADAPALENE
GEL 0.1%
ACNE TREATMENT
Previously available only by prescription
FDA approved
Dermatologist Developed
Once Daily Topical Retinoid*
* Read consumer information leaflet before use
NETWT1.6 oz (45 g)
Original tube


DIFFERIN® GEL
ACNE TREATMENT
ADAPALENE GEL 0.1%
NETWT1.6 OZ (45 g)


SureCure™
adapalene 0.1% w/w
جمجوم فارما
Jamjoom Pharma
GEL
30 grams

6. Anti-inflammatory and Barrier-Reinforcing Agents

- These ingredients work to calm, soothe, and reduce redness and irritation in the skin. They are essential for conditions like rosacea, eczema, acne, and general sensitivity.
- **1. Inhibition of Pro-Inflammatory Mediators:** They block the production or action of key signaling molecules that drive inflammation, such as: Cytokines (e.g., TNF-α, IL-1β, IL-6) , Prostaglandins (by inhibiting the cyclooxygenase (COX) enzymes) and Leukotrienes.
- **2. Antioxidant Activity:** Many antioxidants are also anti-inflammatory because they neutralize free radicals (Reactive Oxygen Species - ROS) that can trigger and exacerbate inflammation.
- **3. Modulation of Immune Cell Activity**: They can calm down overactive immune cells in the skin, like mast cells and Langerhans cells, preventing them from releasing histamine and other inflammatory signals.

Types

1.Niacinamide (Vitamin B3) : multi-tasking superstar. Inhibits the transfer of inflammatory mediators to skin cells. Used for redness, acne, strengthening the barrier, and brightening.

Shrinks Enlarged Pores

Treats Acne

2.Aloe Vera

Contains polysaccharides and glycoproteins that have a cooling, soothing effect. Provides immediate relief for burns, sunburns, and general irritation.

3.Green Tea Extract Epigallocatechin Gallate (EGCG)

A potent antioxidant that suppresses inflammatory cytokines. Excellent for calming acne-related redness and protecting against environmental damage

4.Beta-Glucan

A powerful polysaccharide derived from oats or yeast. It soothes by forming a protective film and modulating the skin's immune response. Very gentle and hydrating.

LUXE
ORGANIX

Suitable for all
skin types

Helps treat skin
pigmentation

Aloe vera
leaf juice

Removes dead skin
cells naturally

5.Panthenol (Vitamin B5)

A pro-vitamin that converts to pantothenic acid in the skin. It attracts moisture and has strong anti-inflammatory and wound-healing properties.

6.Oats

Unique antioxidants in oats that are exceptionally effective at relieving itch and inflammation. The basis for many colloidal oatmeal products for eczema

Uses in Skincare

1. **Treating Redness & Rosacea:** To reduce facial flushing and visible blood vessels.
2. **Calming Acne & Reducing PIE:** To lessen the red, inflamed appearance of pimples and post-acne red marks (Post-Inflammatory Erythema).
3. **Managing Eczema & Dermatitis:** To relieve itching, scaling, and irritation. Soothing Post-Procedure Skin: After chemical peels, laser treatments, or microneedling to aid healing.
4. **Counteracting Irritation:** Used in formulations with strong actives (like retinols or exfoliating acids) to buffer their potential side effects

7.Peptides:

- **Mechanism:** Short chains of amino acids that act as signaling molecules to encourage the skin to produce more collagen and elastin.
- **Benefits:** Enhance skin firmness, elasticity, and reduce the appearance of wrinkles.

MEDICUBE PDRN Pink Peptide Serum

Transform your skin with the power of PDRN + 5 Peptide Complex ❤

- ✓ Boost Radiance
- ✓ Fight Fine Lines
- ✓ Deep Hydration
- ✓ Youthful Glow

Upgrade your skincare routine with this pink powerhouse serum!

#Medicube
#PeptideSerum
#KBeautySkincare
#GlowingSkin
#AntiAgingSerum
#SkincareRoutine
#RadiantSkin #GlassSkinGoals
#KBeautySecrets

8. Sunscreen Active Ingredients

- **Chemical filters:**

  Absorb UV energy (e.g., avobenzone, octinoxate).

- **Physical filter**

  Reflect/scatter UV radiation (e.g., zinc oxide, titanium dioxide).

  Mechanism:

  Prevent DNA damage, photoaging, photocarcinogenesis.

  SPF rating:

- Indicates protection primarily against UVB. Sun Protection Factor, which measures how effectively a sunscreen protects against the sun's ultraviolet B (UVB) rays that cause sunburn. The higher the number, the more protection it provides; for example, SPF 30 blocks about 97% of UVB rays, while SPF 50 blocks about 98%. It's important to remember that no sunscreen can block 100% of rays, and the protection can decrease from sweat, water, or towel-drying.
- **SPF** = (Time to burn with sunscreen) / (Time to burn without sunscreen).

Difference Between Physical and Chemical Sunscreens

- **Physical sunscreens, also known as mineral sunscreens, work by sitting on the surface of the skin and reflecting or scattering ultraviolet (UV) rays.**
- **They typically contain zinc oxide or titanium dioxide as active ingredients. Because of their mode of action, they provide immediate protection upon application and are generally well tolerated by sensitive, reactive, or post-procedure skin. However, one common drawback is that they may leave a white cast, particularly on darker skin tones, which can be cosmetically undesirable.**

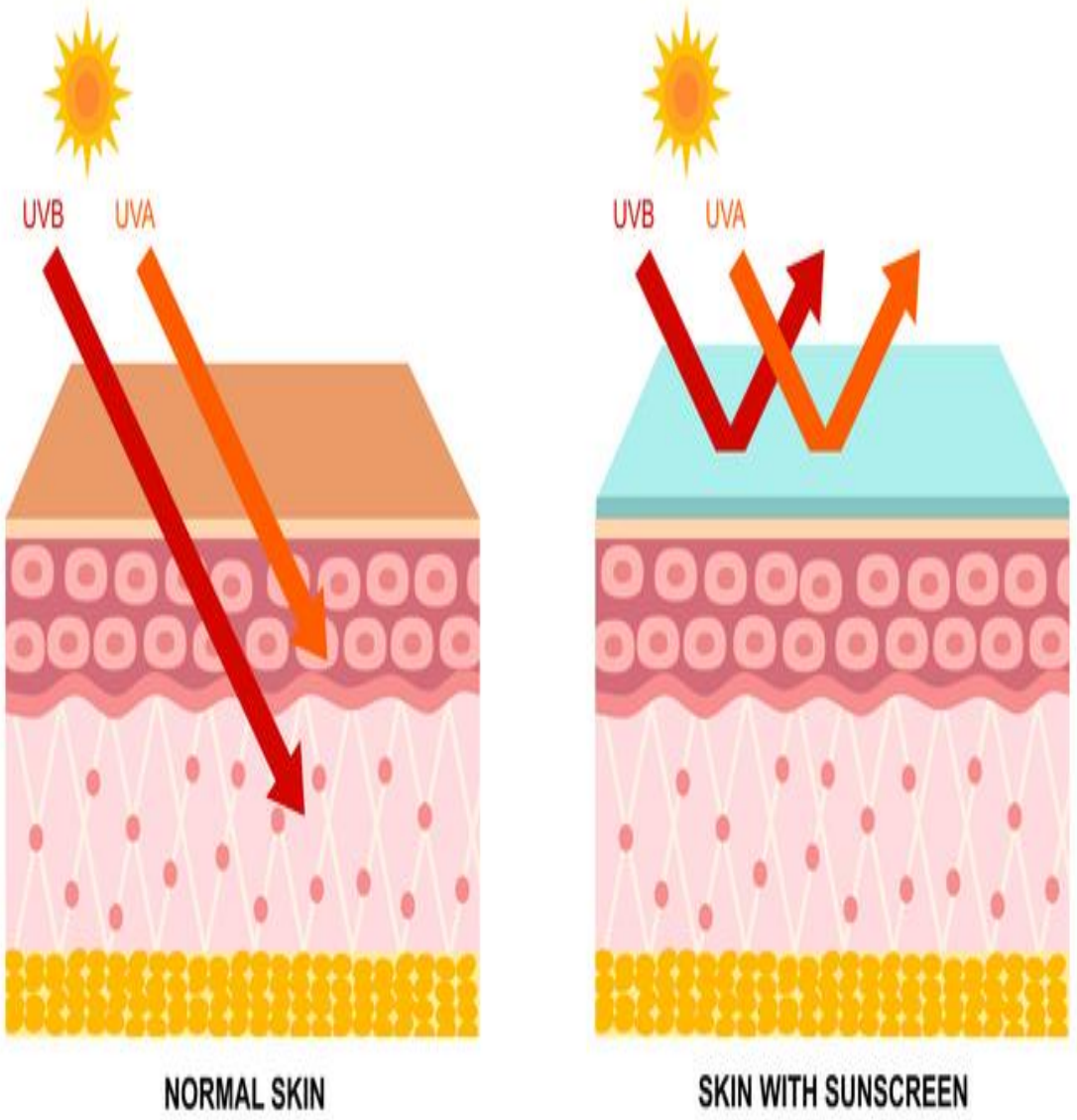
Difference Between Physical and Chemical Sunscreens

- **Chemical sunscreens, on the other hand, are also called organic sunscreens. They work by absorbing UV radiation and converting it into heat, which is then released from the skin.**
- **These sunscreens usually contain ingredients such as avobenzone, oxybenzone, octinoxate, or octocrylene. They require 15 to 30 minutes after application before becoming effective. They are generally more cosmetically elegant — lightweight, transparent, and easier to apply — making them a popular choice for daily use and under makeup.**

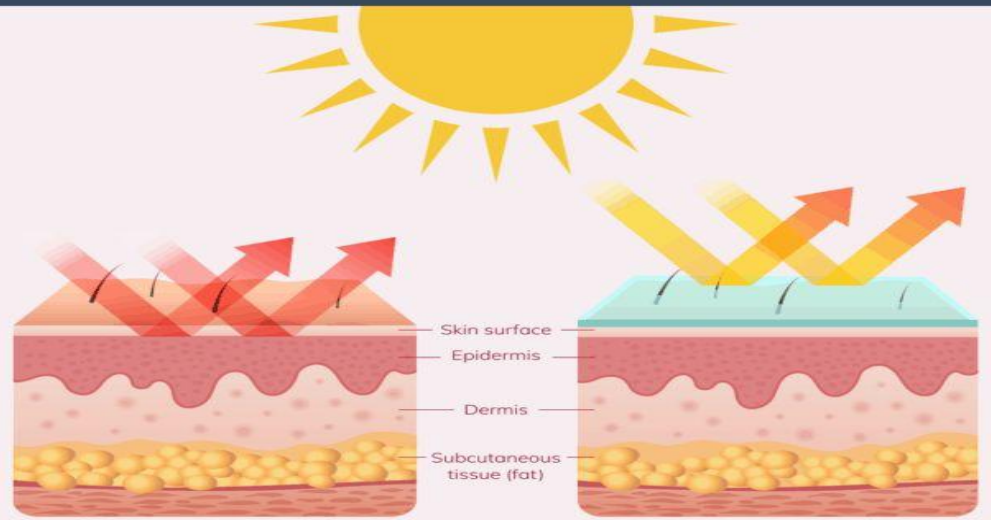
Difference Between Physical and Chemical Sunscreens

- **physical sunscreens are recommended for patients with rosacea, eczema, acne-prone skin, or those undergoing post-laser treatments, as they are less likely to cause irritation or allergic reactions. They are also considered safe during pregnancy and for young children.**
- **Chemical sunscreens, while effective and aesthetically pleasing, may irritate sensitive or compromised skin, especially after procedures like chemical peels or laser resurfacing. Some chemical filters can cause stinging or burning, particularly around the eyes or on broken skin. Additionally, certain ingredients (like oxybenzone) have raised concerns regarding coral reef safety and potential hormonal effects, although data on this is still being studied.**

UV PROTECTION



Chemical vs. Physical Sunscreen



Chemical sunscreens

Absorbs
Works by absorbing UV radiation and converting it into heat

Chemicals
Active ingredients include a variety of synthetic chemicals

Risks to health
potential long-term safety concerns

Possible allergic reaction to skin, endocrine disruption, and skin penetration

Physical sunscreens

Reflects
Works by scattering and reflecting UV radiation

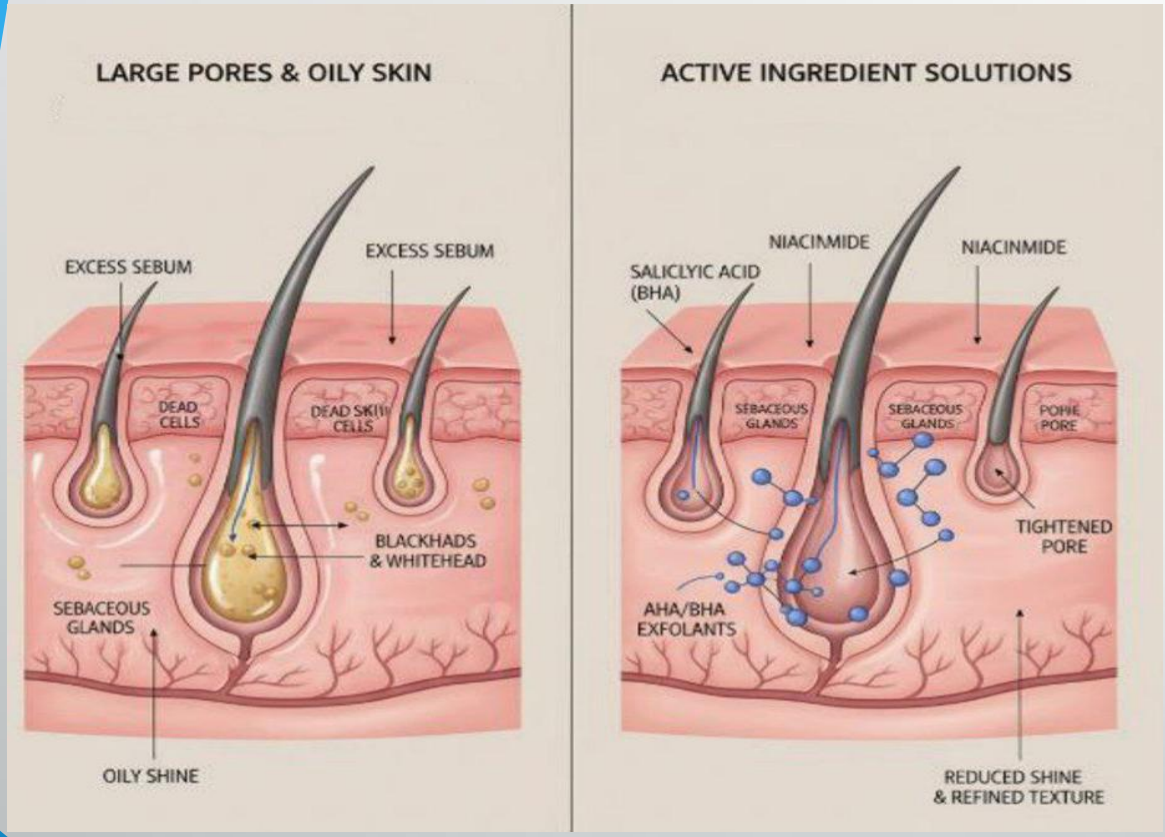
Minerals
Active ingredients include zinc oxide and titanium dioxide

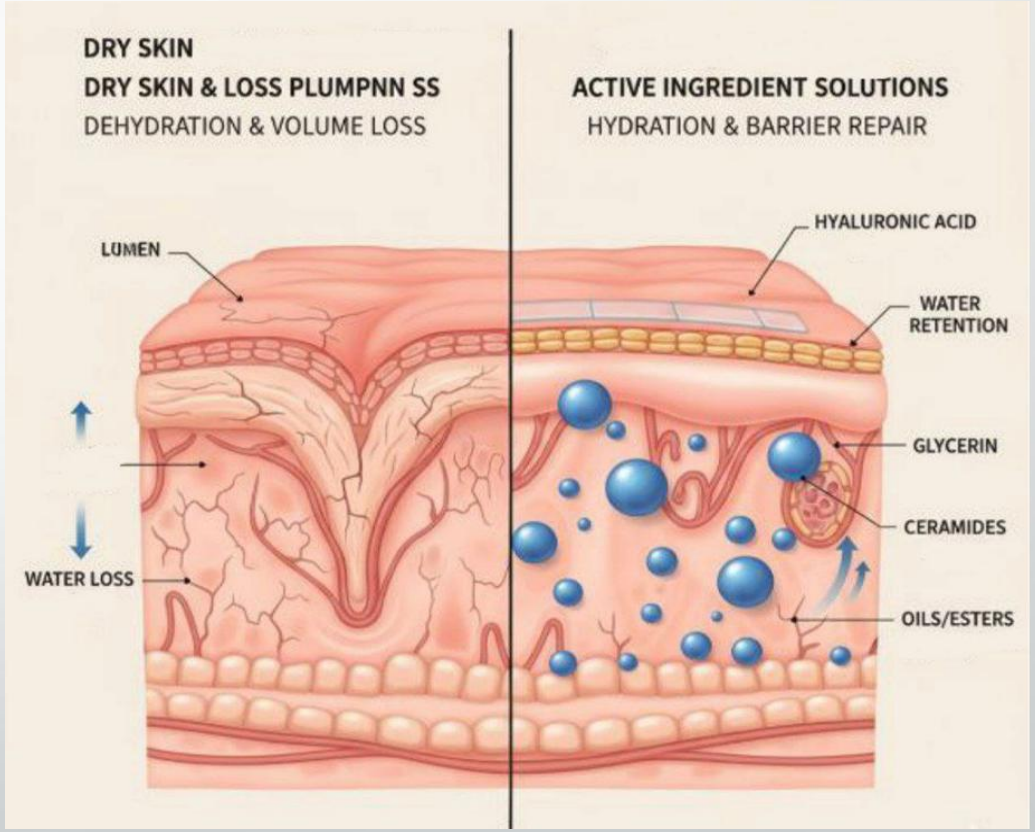
Generally safe

Does not penetrate the skin

Ingredients considered safe

Possible inhalation concerns for spray/aerosol form


LARGE PORES & OILY SKIN
EXCESS SEBUM
EXCESS SEBUM
DEAD CELLS
DEAD SKIN CELLS
BLACKHADS & WHITEHEAD
SEBACEOUS GLANDS
OILY SHINE
ACTIVE INGREDIENT SOLUTIONS
SALICLYIC ACID (BHA)
NIACINMIDE
NIACINMIDE
SEBACEOUS GLANDS
SEBACEOUS GLANDS
PORE
TIGHTENED PORE
AHA/BHA EXFOLANTS
REDUCED SHINE & REFINED TEXTURE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DEHYDRATION & VOLUME LOSS
ACTIVE INGREDIENT SOLUTIONS
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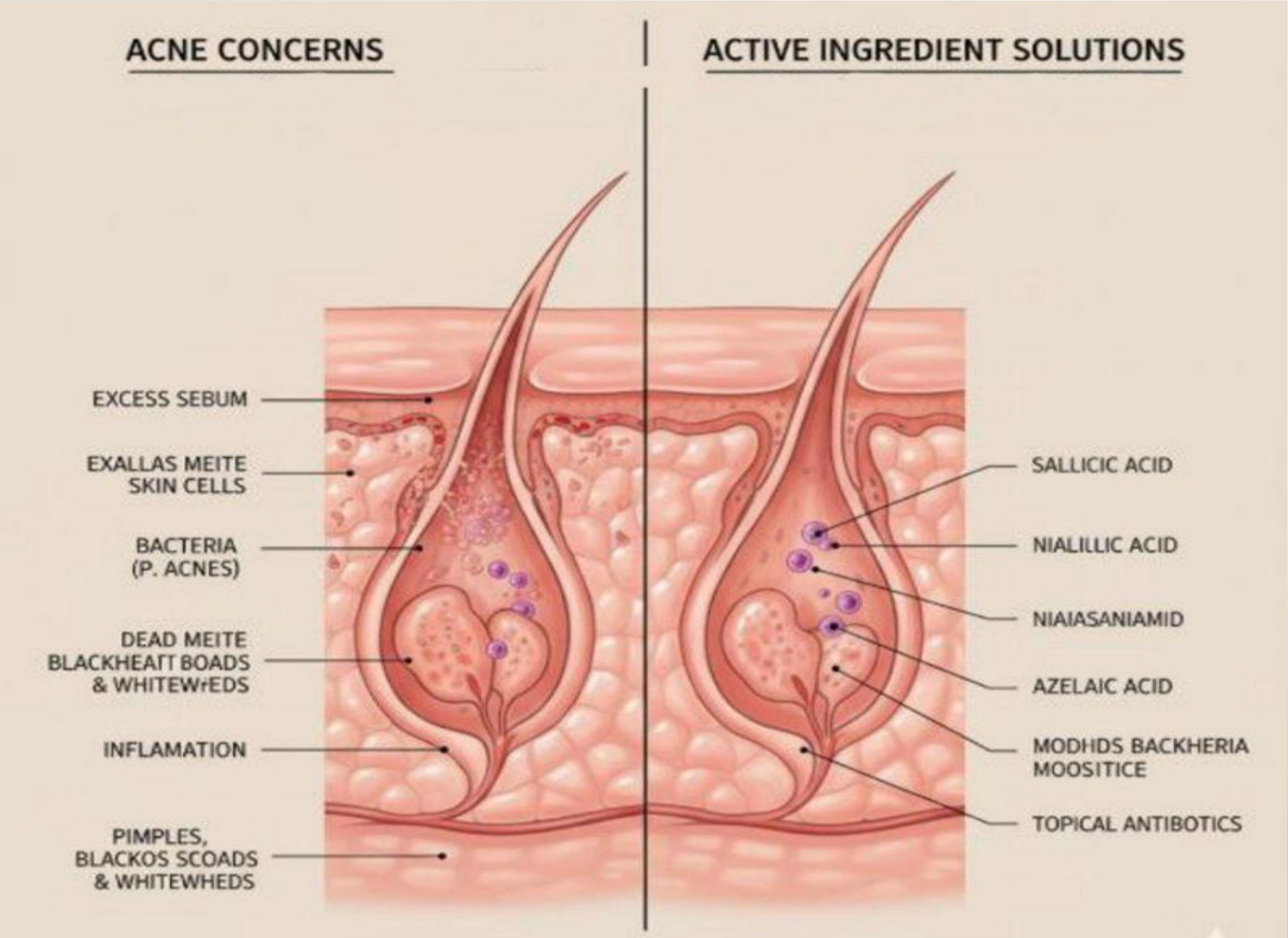
WATER LOSS
HYALURONIC ACID
WATER RETENTION
GLYCERIN
CERAMIDES
OILS/ESTERS


ACNE CONCERNS
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INFLAMATION
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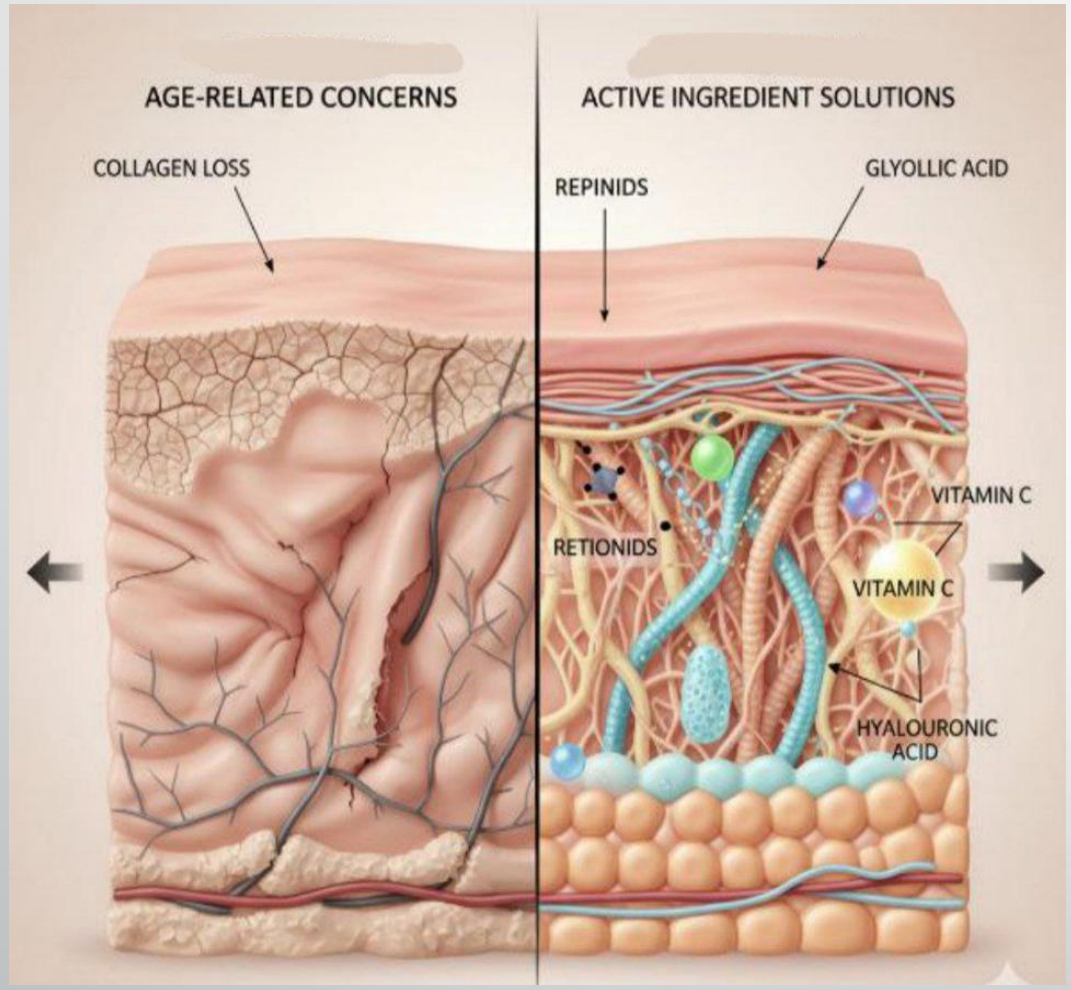
AGE-RELATED CONCERNS
ACTIVE INGREDIENT SOLUTIONS
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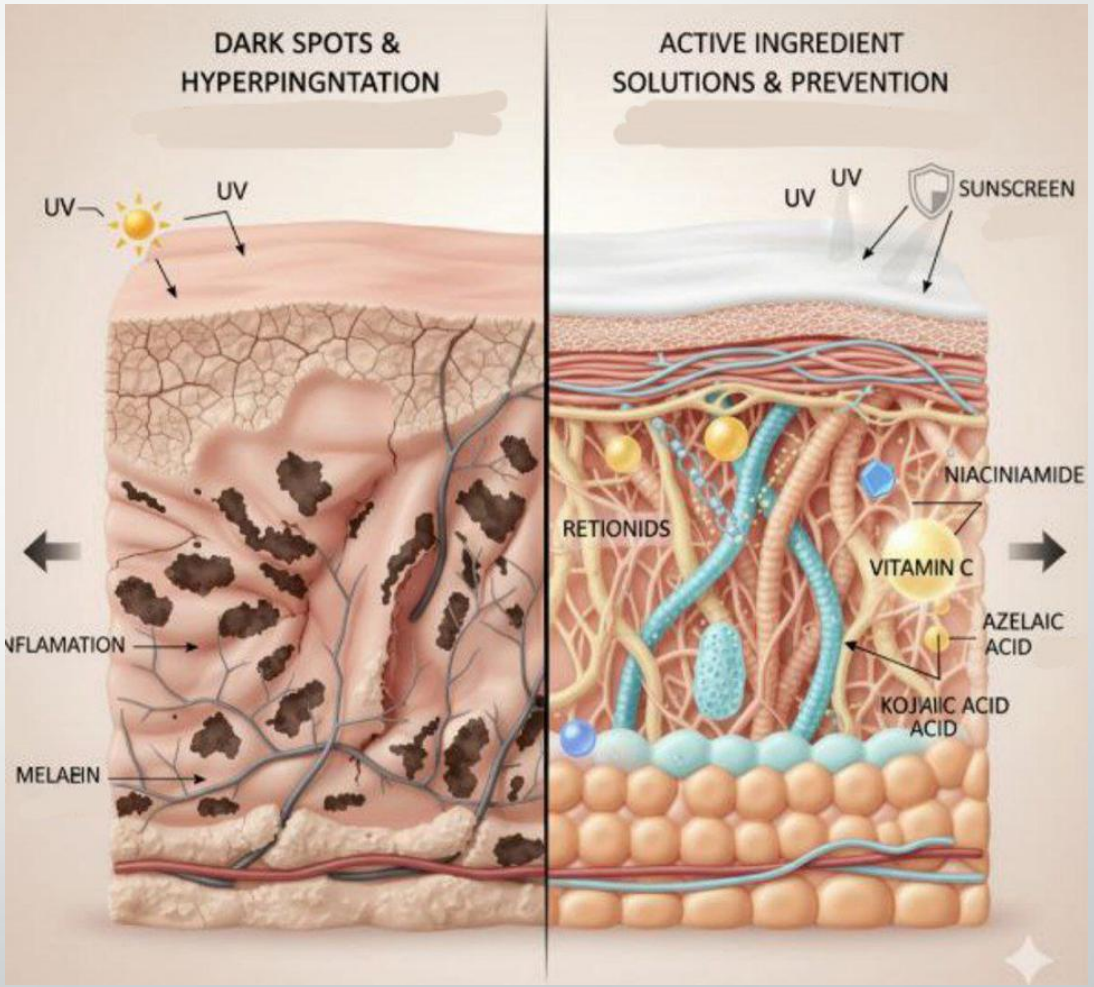
GLYOLLIC ACID
VITAMIN C
RETIONIDS
VITAMIN C
HYALOURONIC ACID


DARK SPOTS & HYPERPINGNTATION
ACTIVE INGREDIENT SOLUTIONS & PREVENTION
UV
UV
UV
UV
SUNSCREEN
NFLAMATION
MELAEIN
RETIONIDS
NIACINIAMIDE
VITAMIN C
AZELAIC ACID
KOJAIIC ACID
ACID

Clinical Application and Patient Counseling

1. Tailor product choice to skin type, age, and condition.
2. Introduce active ingredients gradually to minimize irritation.
3. Warn about contraindication in pregnancy (e.g., retinoids)
4. Emphasize photoprotection, especially when using retinoids or acids.

Factors Influencing Effectiveness of Active Ingredients

1. PH of the Formulation

- The pH level determines the solubility, penetration, and stability of many active ingredients.
- Vitamin C (L-ascorbic acid) is most effective at pH ~3.0–3.5.
- Alpha Hydroxy Acids (AHAs) like glycolic acid work best at low pH (~3–4) to exfoliate effectively.
- Salicylic acid (BHA) requires slightly acidic pH (~3–4) for optimal oil solubility and pore penetration.

Factors Influencing Effectiveness of Active Ingredients

2. Concentration and Stability

- Higher concentrations can increase efficacy, but stability and skin tolerance must also be considered.
- Retinol is effective at 0.25–1%, but it is highly unstable and sensitive to light and oxygen.
- Niacinamide is stable and effective between 2–5%; higher concentrations may cause flushing.
- Hydroquinone is used at 2–4% for pigmentation but oxidizes easily, turning brown when unstable

Factors Influencing Effectiveness of Active Ingredients

3. Delivery Systems

- Encapsulation or delivery technologies can enhance skin absorption and reduce irritation.
- Encapsulated retinol releases slowly, reducing irritation and increasing stability.
- Liposomal Vitamin C penetrates deeper and resists oxidation compared to free ascorbic acid.
- Niacinamide in nanoemulsions allows better absorption with less surface irritation.

Factors Influencing Effectiveness of Active Ingredients

4. Skin Type and Condition

- The effectiveness and tolerability of actives vary depending on the individual's skin type and any existing conditions.
- Azelaic acid is ideal for sensitive or rosacea-prone skin.
- Salicylic acid works well for oily and acne-prone skin, but may dry out dry skin types.
- AHAs like glycolic acid may irritate eczema-prone or barrier-damaged skin.

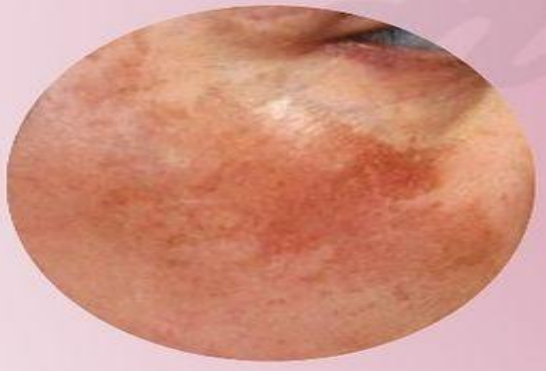
Factors Influencing Effectiveness of Active Ingredients

- **5. Compatibility with Other Ingredients**
- **Some ingredients enhance each other, while others may cause irritation or reduce effectiveness when combined.**
- **Vitamin C + Vitamin E + Ferulic Acid → synergistic antioxidant effect.**
- **Retinol + Niacinamide → improves tolerance and boosts anti-aging effects.**
- **Benzoyl peroxide + Retinoids → can deactivate retinoids or cause excessive irritation if not spaced apart.**

Azelaic Acid

- Is a naturally occurring dicarboxylic acid derived from grains such as wheat, rye, and barley. It is used in dermatology and cosmetic products for its antibacterial, anti-inflammatory, keratolytic, and skin-brightening properties.
- It is commonly applied topically to treat conditions such as acne, rosacea, and melasma, and is well tolerated by sensitive skin types.

Azelaic Acid

Before		After
	Inflammation	
	Pigmentation	
	Bumpy Texture	

Panthenol

- Panthenol is a pro-vitamin B5 compound commonly used in skincare and cosmetic products. It acts as a moisturizer, humectant, and skin conditioning agent, helping to improve skin hydration, promote healing, and enhance the skin barrier function.
- Panthenol is widely used to soothe irritated or dry skin, accelerate wound healing, and improve softness and elasticity.


Panthophil
Vitamin
Hair Tonic
For Strong Hair
Panthophil
Vitamin
Hair Tonic
150 ml


Skinoren
KREM 20%
Acidum azelaicum
30 g


Bepanthen
Skin Moisturizer
Moisturizes and cares
for dry skin
30g

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Thank you