

Dry Skin and Moisturizers

**Prof Saja Hamed
PhD in Cosmetic Science**

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History of using skin moisturizers

- Depending on geographic locations they used avocado oil, palm oil, olive oil, sesame seed oil and animal fats

استخدموا المرطبات هو التي موجود من زمان من أيا جدراننا كانوا يستخدموا أنواع مختلفة من الزيوت حسب المتوفر، أحدها بصلنا طعمنا كانوا يستخدموا أكثر استي نرت الزيتون

- Olive oil → Quran and Prophet Mohammed PBAH
- Olive oil was popular among ancient Greeks, ancient Olympics were conducted by men greased with olive oil
- Galen, a famous physician in ancient Rome, is credited with the formulation of the forerunner of cold cream (he added as much water as could be incorporated into a mixture of beeswax and olive oil)

→ this is old formula → Oil + water + surfactant

Surfactant

History of using skin moisturizers

- ^{↗ Vaseline} Petroleum jelly was discovered in the mid-1800s in Pennsylvania by a chemist called Chesebrough. He discovered that a gooey substance was causing problems to the oil rig workers since it stuck to the drilling rigs, he also noticed that this substance had the property to heal cuts and burns--> by 1870, Chesebrough was marketing his new product called Vaseline ^{كان زمان بنم استخدام الvasaline لتليين المعدة (orally)}
- The first significant advancement of simple moisturizers occurred in the 19th century when emulsifiers were developed to create stable emulsions
- Silicone oils were started to be used during the 20th century

Key concepts

- Moisturizers are designed to:
 1. Improve the skin quality
 2. Maintain or restore the moisture content of the SC
 3. Keep SC smooth and pliable
 4. Aid in alleviating the symptom of dry skin
- ← خصوصاً في الشتاء

Key concepts

- The term moisturizer is a generic term used to describe ingredients that add moisture to the skin
** add and keep moisture in the skin*
- Three types of moisturizers are distinguished based on their: physical and chemical properties and mechanism of action:
 - Humectants
 - Emollients
 - Occlusives

Key concepts

- Most of these formulations are emulsions, including both low-viscosity lotions and higher-viscosity creams المهم المستحضر يكون فيه طور مائي و طور زيتي وبعدين يتحكم باللزوجة

- The most commonly tested performance parameters include the moisturizing effect and aesthetic properties of the products أنا ممكن أتأكد انه مستحضر الترطيب تبعي منيح عن طريق تجربته على مجموعة من الناس وأخذ آراءهم ويمكن أبقارنه مع مستحضر موجود أصلاً بالسوق رحت أختبر اذا مستحضرى رح بقدر ينافس.

- Skin rejuvenators ingredients can also be added هنا أشياء إضافية يمكن إضافتها إلى المستحضر مثل فيتامينات أو niacinamide
بس هقول من أشياء أساسية بال moisturizer ومتى كثير وجودهم .

Dry Skin

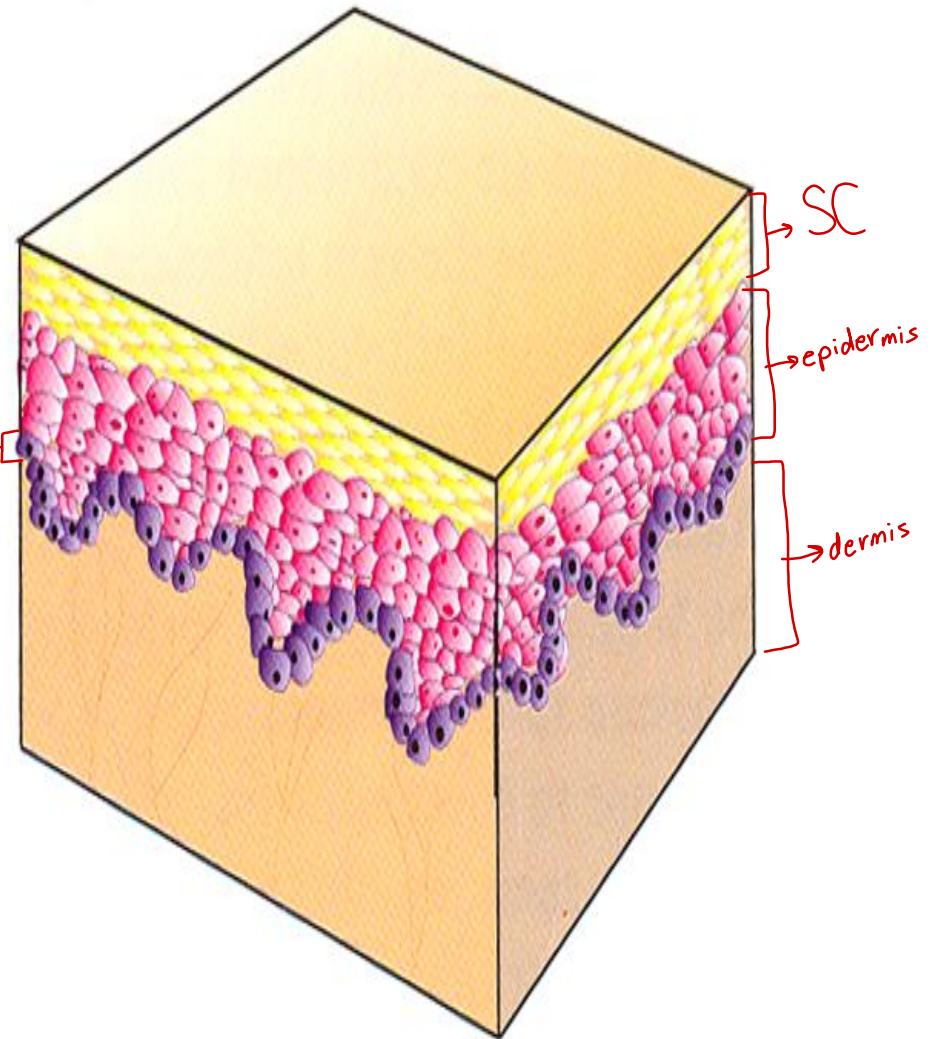
- Also known as xerosis
- Can be a congenital or acquired condition *in winter, or when use anti acne product.*
- It can be mild or so severe that it leads to skin breakdown and infection *and bleeding.*
- Mild dry skin is a condition that affects many patients
- Over \$1 billion a year is spent in the United States on moisturizing skin-care products *مشكلة dry skin هي مشكلة منتشرة كثير بين الناس , واستخراا المرطب لعلاج هي المشكلة كثير ضروري ما يصير أهملها وأتركها لأنها ممكن تؤدي إلى مضاعفات خطيرة .*

Water content of
keratinous layer: 10–30%

Water content of
dermis and epidermis: 80%

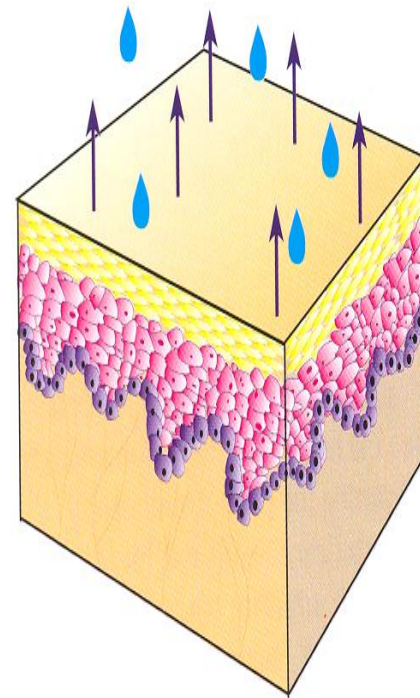
basal layer
هي الطبقة المسؤولة عن
تجديد الخلايا لوجود
الـ stem cells فيها

بحيث تنقسم كل خلية فيها إلى خليتين وحدة تنزل بالـ basal layer والثانية تنقل للأعلى باتجاه الـ SC , خلال عملية انتقالها للأعلى يصبح عليها Keratinization
ويصبح خلية مختلفة تماماً بحيث أنه ما يكون فيها cytoplasm و nucleus , وتكون مليئة
بـ Keratin ودهونها lipids حتى تقوم بالـ function المطلوبة منها وهي حماية الجلد
وطبعاً أي خطأ في هذه العملية ,م يؤدي إلى حدوث أمراض مثل الصدفية , التي
المشكلة فيها أنه الخلايا تنقل من الـ basal layer للـ SC بسرعة كبيرة بحيث
ما يتألف الخلايا تغير شكلها , فممازح تقدر تقرأ بوظيفتها بالتدريج



The water content of the skin.

- When the water content of the skin is normal, the skin appears soft and smooth
- There is a continuous movement of water from the deep layers of the skin to the superficial layers where the water evaporates from the surface



Evaporation of water from the skin surface.

الماء ينتقل من طبقات الجلد السفلية إلى العليا
 حسب (Passive diffusion) من الأكثر تركيز إلى الأقل تركيز بحركة
 مستمرة، بالوضع الطبيعي الطبقة الخارجية من الجلد تكون قادرة
 على أنها تحافظ على نسبة معينة من الماء داخل الجلد حتى
 تجف من الجفاف.

Natural factors that prevent skin dryness:

(1) Intercellular lipids of the horny layer (SC):

composed mostly of free fatty acids, cholesterol, and ceramides
عنتان ينعو فخران الماء من تحت لفوق

(2) Natural moisturizing factors (NMF) that retain water content of the

horny layer: Small hygroscopic compounds inside the cells of the horny layer
بس توصل الماء عندها بتمنعها عشان تحافظ على نسبة معينة من الماء في ال SC , في خا س يكون عندهم مرض اسمه جلد السمكة , بيكون جلدهم دائئًا جاف و بيكون flakes , صدف بيكون جسمهم غير قادر على تصنيع ال NMF , فصدف بيعيشو كل حياتهم على المغطيات والمربطيات

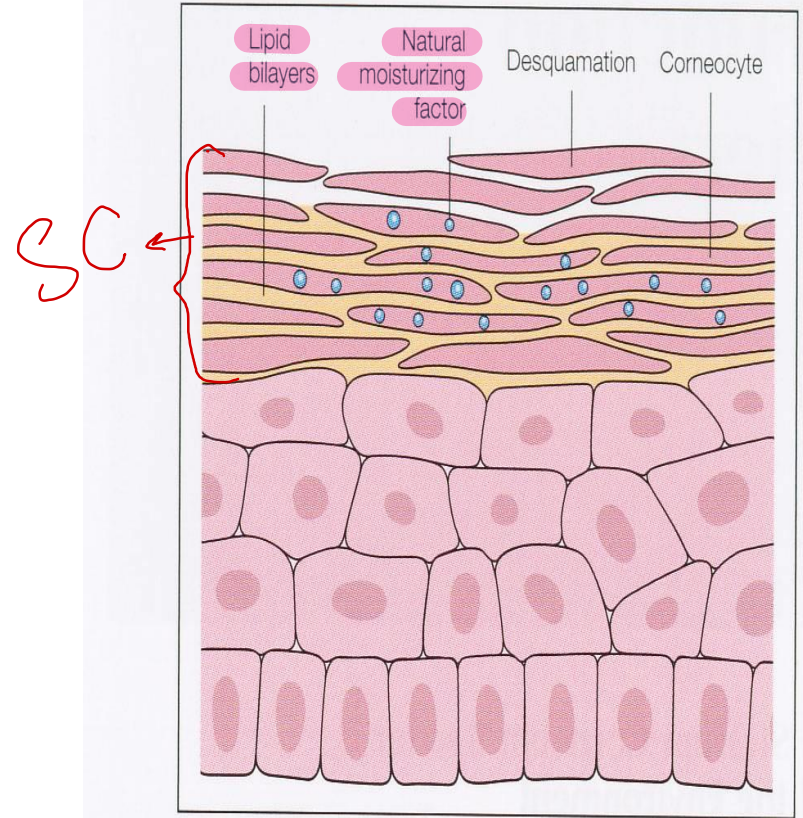


Fig. 2.2 The four key processes for the formation and functioning of the stratum corneum

Chemical composition of natural moisturizing factor within corneocyte

Concentration >5%

- Free amino acids
- Pyrrolidone carboxylic acid (PCA)
- Lactate
- Sugars
- Urea
- Chloride
- Sodium

Concentration <5%

- Ammonia
- Uric acid
- Glucosamine
- Creatine
- Calcium
- Magnesium
- Phosphate
- Citrate
- Formate

Box 14.1 Chemical composition of natural moisturizing factor within corneocyte

What causes dry skin?

A. External causes:

- exposure to dry environment and wind
- artificial indoor heating → the skin tends to be dryer in the winter “winter itch”
- air-conditioned room (cold dry air) → cause the skin to become dry
- Frequent washing انسان الذي طبيعة عملهم تتطلب انهم يغسلوا ايديهم باستمرار مثل الأطباء والممرضين والذي يشتغلوا بالمختبرات
- exposure to certain substances: e.g. certain medical treatments (such as some acne treatment) cause drying of the skin

Environmental agents that can lead to Dry Skin

Environmental Agents That Can Lead to Dry Skin

- Hot water
- Detergents
- Friction from clothing
- Frequent air travel
- Pollution
- Other chemicals
- Air conditioning

What causes dry skin?

B. Internal g

■ Dermatitis (eczema)

* aging

* Ichthyosis Vulgaris (جذ السمك)



إذا ما عالجته مع الوست راح يصير عنه المريض تشقق و bleeding



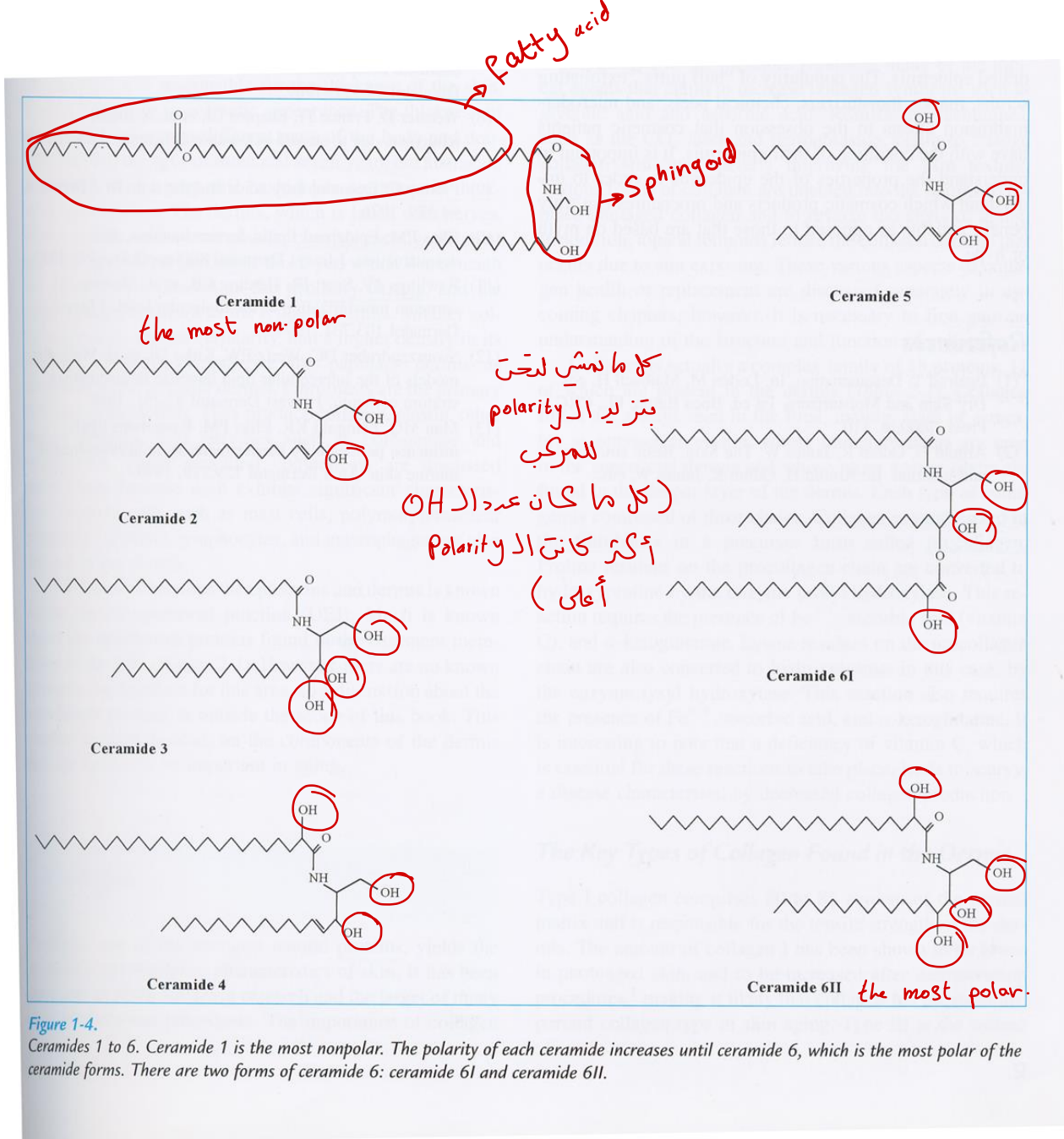
Figure 13. Cracking—Grade 10.

What causes dry skin?

- It is characterized by the lack of moisture in the SC
- Barrier perturbation causes an increase in TEWL allowing excessive water to be lost to the atmosphere *Trans Epidermal Water Loss*
- Skin with a normal water content will shed off dead cells naturally *desquamation = shed off*
- Decreased water content in the stratum corneum leads to abnormal desquamation of corneocytes
- Patients with dry skin have a perturbation in the normal bilayer structure of lipids which is associated with increased fatty acid and decreased ceramide levels *في بعض الدراسات اكتشفوا انه سبب الجفاف وخصوصاً في حالة eczema يكون بسبب اضطراب في lipid bilayer , وممكن احياناً بعض مستحضرات التجميل يكون مكتوب عليها انها غنية بالceramide*

Ceramide

- Constitutes 40% of the human SC lipids
- Six classes
- Basic structure is a fatty acid covalently bound to a sphingoid base
- Ceramide 1 is non-polar and contain linoleic acid (*fatty acid*)
- It has been shown that ceramides applied externally, in the form of moisturizers, can effectively reduce dry skin symptoms



What causes dry skin?

In dry skin:

- Scales → dead cells do not shed off easily and remain attached بأنه لا يسهل أن يتساقط خلايا الجلد المتراكمة فوق بعضها بأنه لا يسهل أن Skin Shedding as single cells الخلايا بالوضع الطبيعي يسهل لها أن تتساقط كخلايا منفردة
- Fissures → interfere with its function as a protective layer → increased water loss → the skin become dryer كشقوقات
- The condition is worst in areas of the body with relatively few oil glands (e.g. arms, legs, and trunk) (Sebum helps in moisturizing the skin.)



fissures



Moisturizers:

- Mild dry skin is a condition that affects many patients
- Incidence of Dry skin has increased:
 - People bathe and shower more frequently
 - Fragrance bubble baths and bath salts are used more commonly
- The symptoms of dry skin can be treated by increasing the hydration state of the SC with occlusive or humectant ingredients and by smoothing the rough surface by an emollient

*أما علينا أنه الـ dry skin لها يكون عندي مشكلة بالـ barrier الخارجي بالجلد بحيث يظل قادر يحتفظ بكمية الماء اللازمة

Moisturizers:

- **Moisturizers Components:**
- **Occlusive ingredients:** form a hydrophobic film on the skin surface → retards water loss
- **Humectant ingredients:** attract water into the epidermis *وَضِعًا هِيَ الْمِي يُكْن يَكُون مَهْرَهَا إِمَّا مِنَ الْمُسْتَحْضَر أَوْ مِنَ الْجَوِّ أَوْ مِنْ طَبَقَاتِ الْجِلْدِ الْإِخْلِيَّةِ*
- **Emollient ingredients:** fill in effect to smooth the rough surface of the dry skin
- **Most moisturizers contain a combination of occlusives and humectants.**

Occlusives

- They coat the SC to retard TEWL
- They are usually oily substances
- An occlusive is one of the best choices to treat dry skin because it provides an emollient effect as well as decreases TEWL
- Effective only while present on the skin
- Petrolatum and mineral oil

Occlusive agents

مهم

Hydrocarbon oils/waxes

- Petrolatum
- Mineral oil
- Paraffin
- Squalene
- Silicone derivatives:
 - Dimethicone
 - Cyclomethicone

Wax esters

- Lanolin
- Beeswax
- Stearyl stearate

Vegetable waxes

- Carnauba
- Candelilla

Fatty alcohols

- Cetyl alcohol
- Stearyl alcohol
- Lanolin alcohol

Phospholipids

- Lecithin

Sterols

- Cholesterol

Fatty acids

- Stearic acid
- Lanolin acid

Polyhydric alcohols

- Propylene glycol

→ occlusive and solvent.

occlusives و emulsifiers
Co solvent

Box 14.2 Occlusive agents

Occlusives: Petrolatum

- Considered by many to be one of the best moisturizers
- Used in skin care products since 1872
- It is a purified mixture of hydrocarbons that is derived from petroleum
- Has a greasy feeling
- Noncomedogenic and does not cause allergic reactions
- It is often combined with other ingredients to decrease the greasy feeling

Petrolatum, USP

- ***is a purified mixture of*** semisolid hydrocarbons obtained from petroleum.
- vary in color from yellowish to light amber. يختلف باللون حسب مكونات الميكترة من الهيدروكربونات
- It melts at 38°C to 60°C and may be used alone or in combination with other agents as an ointment base.
- Petrolatum is also known as yellow petrolatum and petroleum jelly.
- A commercial product is Vaseline.

White Petrolatum, USP

- ***Is a purified mixture*** of semisolid hydrocarbons from petroleum that has been wholly or nearly decolorized.
- It is used for the same purpose as petrolatum, but because of its lighter color, it is considered more esthetically pleasing by some pharmacists and patients.
- White petrolatum is also known as white petroleum jelly.
- A commercial product is White Vaseline

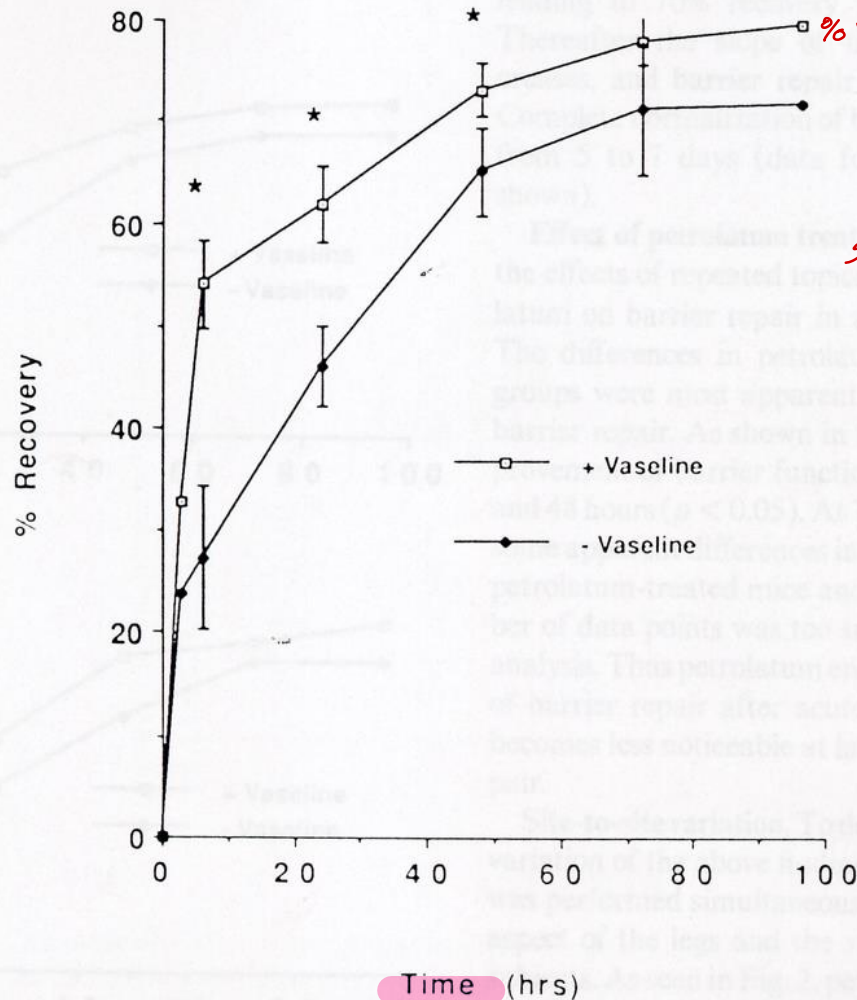


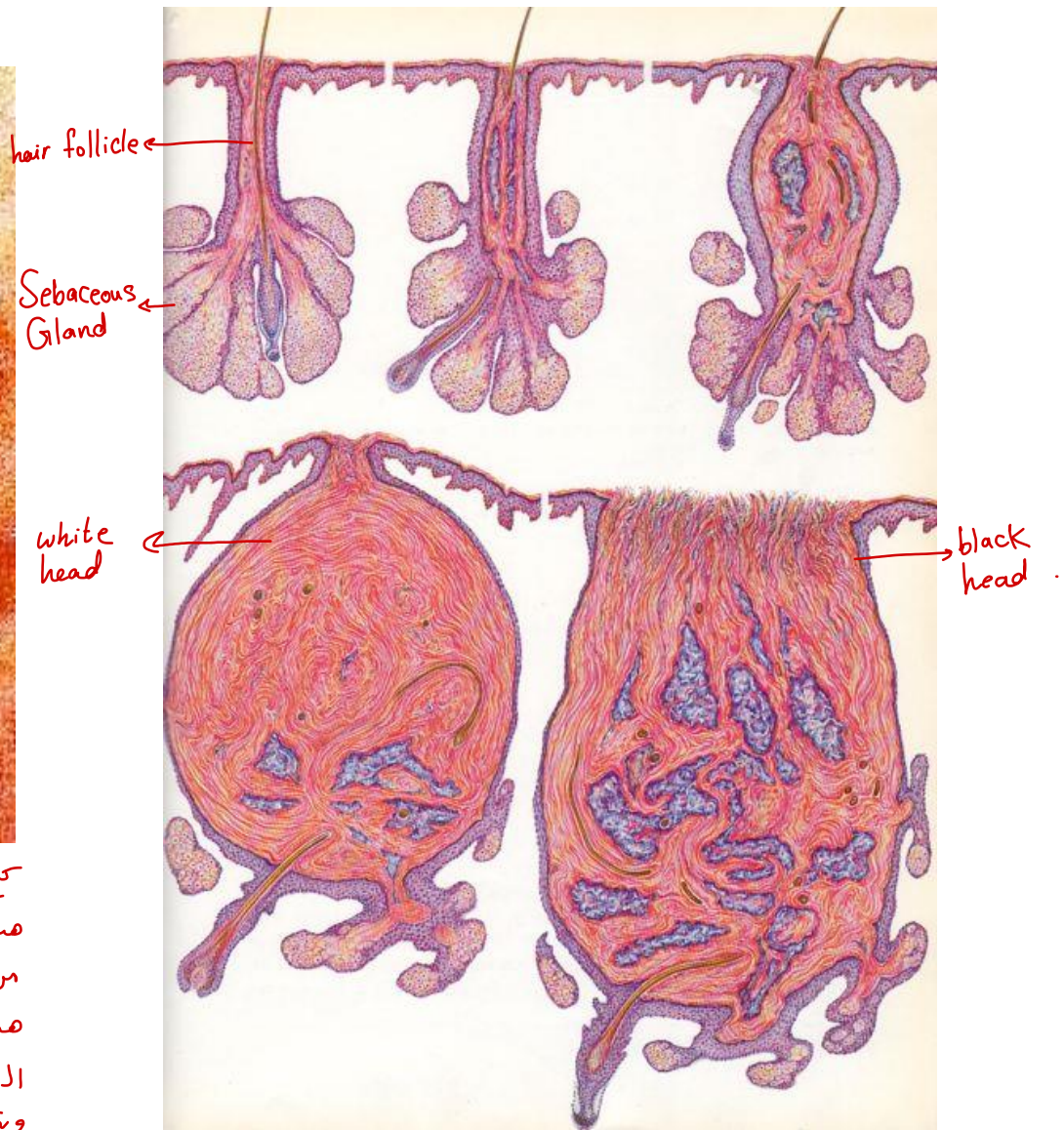
Fig. 1. Effect of petrolatum on barrier recovery. Note accelerated rates of barrier recovery after repeated applications of petrolatum after acute barrier disruption with acetone. Measurements of TEWL were made with the Servomed Evaporimeter. Data points shown represent the mean \pm standard error of the mean ($n = 5$). Asterisks indicate $p < 0.05$ with the paired t test.

% recovery with vasline was faster.

في نسيجة دراسة تحملوها عشان تقارنو
بين سرعة الشفاء من الـ dry skin
لما استخرمنا Vasline. ولما ما استخرمنا
Vaseline.
طبعا اول اشئ وضعنا مادة على الجلد
عشان يخرب حاجز البشرة مثل الـ Acetone
اللي رح يتعمق بتزويب الـ lipids بطبقة
الـ SC, وبعدئذ مطعم vasline على منطقة
معينة ومنطقة تركوها بدون vasline وبعدئذ
قارنوا كيف كانت سرعة الـ healing بين
المنطقتين

Comedogenic vs. Noncomedogenic

- **Comedogenic:** the tendency of a topical ingredient or product to cause the development of comedones, possibly leading to or worsening acne eruptions
- **Comedone:** clogged pore
- **The ingredient or product is unlikely to cause comedone development** (non-Comedogenic)



كيف يتكون ال Comedone ؟
 هذا أنا عندي بالجمل يتكون ال Sebaceous gland الذي يتفرع بافراز ال Sebum
 مربوطة مع ال hair follicle بالجمل وبيتم افراز العرق للخارج عن طريقها
 هذا اذا هي ال hair follicle مملوءة فيها ال clogging يعني سكرت راح يغل
 ال Sebum قادر انه يطلع لبرا وراح يتجمع حول ال hair follicle
 ويكون ال Comedone .
 ال Comedones نوعين
 - منفتح للهواء الجوي فيصير ال oxidation وبيكون لونه أسود ← black heads
 - يكون مسكر تماماً غير معرض للهواء وبيكون لونه أبيض ← white heads

Illustration of the formation of open and closed comedones

كيف أعرف إذا المستحضر تبقي Comedogenic أو لا ؟؟

— بختبره على أذن الأرنب
(طبقاً هاد الامني ممنوع بس في
ناس بيمعملوه)
طبقاً اختبرنا أذن الأرنب لأنها حساسة
جداً لل Comedogenic
products يعني يمين عليها
بسرعة ، فإذا ظهر معي بال test انه
المستحضر non-Comedogenic على الأرنب ناعمل
كثير كبير (انه يكون برضه
non-comedogenic على الإنسان
بس لو كان Comedogenic على الأرنب
فهاد ما يعني انه رح يكون
comedogenic على الإنسان ، لأنه
الأرنب حساس أكثر من الإنسان .



ويمكن أخذ test
على ظهر الإنسان وهاد
الصبح ونسجته موثوقة
أكثر .

Rabbit-ear skin clogs more easily/faster than human skin. If a substance is not comedogenic on a rabbit, chances are it won't be on a human. However, if it is comedogenic on a rabbit, human testing is required to confirm results.

acne.org®

هون بيحكىلك ان الـ American Academy of Dermatologist بتنصح بعدم استخرا الـ Vaseline في حالان الـ acne لأن Comedogenic وده يزيه الوضع سوء .

- Although its non-comedogenic however according to the American Academy of Dermatologists, **Vaseline** can trigger outbreaks if you have **acne-prone** skin. Don't put **petroleum jelly** on your face if you're having an active breakout. There are plenty of other moisturizing options if you have **acne-prone** skin.

However another study shows the opposite of AAD

J. Soc. Cosmet. Chem., 47, 41–48 (January/February 1996) بينا في هي الدراسة التي انعمت عاتان يشوفو تأثير
ال vaseline على (acne) وهدوا (non-comedogenic)

Petrolatum is not comedogenic in rabbits or humans: A critical reappraisal of the rabbit ear assay and the concept of “acne cosmetica”

هنا موضح رج فحكي عنه بعدين هو يتعلق بال acne التي بتسبب استخرا
ALBERT M. KLIGMAN, Department of Dermatology, University of
Pennsylvania School of Medicine, Philadelphia, PA 19104. مستحضر تجيلي .

Accepted March 8, 1996.

Synopsis

The objective was to find out whether petrolatum, previously reported to be comedogenic in the rabbit ear model, would worsen acne. Vaseline petrolatum jelly (Vaseline®, Chesebrough-Ponds) and Vaseline petrolatum jelly cream (Creamy Vaseline®, Chesebrough-Ponds) were applied to separate groups of ten acne patients each twice daily for eight weeks.

No evidence of comedogenic potential was found by the follicular biopsy technique. Papulo-pustules significantly decreased in both groups.

Greasiness cannot be equated with comedogenicity. The admonition for acne patients to seek “oil-free” skin care products has no scientific merit with regard to comedogenicity. Cosmetics are an unlikely cause of the relatively high prevalence of post-adolescent female acne.

However another study shows the opposite of AAD recommendations

هي نفس الدراسة اللي فوق بس بالدرع.

- Three recorded no change.
- Six recorded slight improvement.
- One recorded moderate improvement.

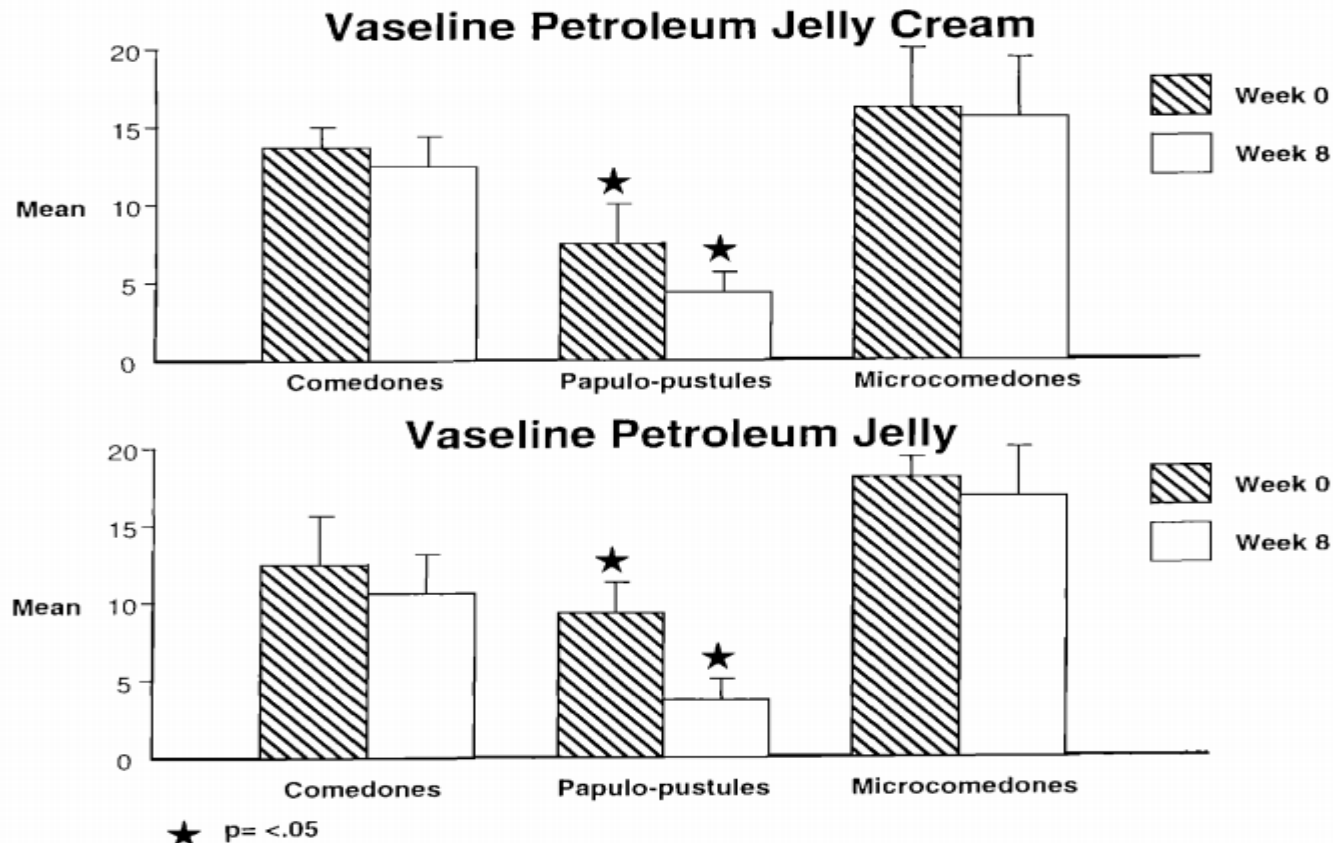


Figure 1. Effect of petrolatums on acne lesion counts after twice-daily applications for eight weeks. Comedones were not affected. Both products significantly reduced papulo-pustules.

Is Petroleum Jelly Comedogenic?



Repeated analyses show that Vaseline[®] petroleum jelly **does not** possess pore-clogging potential

acne.org[®]

*(this is a nice organisation
فيها guidelines ومعلومات عن الـ acne.)*

Take home message

- Petrolatum and mineral oil should be cosmetic grades
- COSMETIC GRADE petrolatum has no contaminants and is non-comedogenic.
لأنه ممكن الشوائب الموجودة في الـ vasline تكون هي اللى سببت الـ acne مش الـ vasline نفسه .
- Don't use thick layer on face

Occlusives:

Lanolin

- Is a complex natural product that cannot be synthesized
- Derived from the sebaceous secretions of sheep
- Lanolin contains cholesterol
- A number of people have develop contact sensitization to lanolin. أي استي مصدره حيواني لانزنا نتوقع انه يمكن يعمل حساسية
- Some moisturizing products are now labeled as lanolin-free. طبعا لما نكتب انه Lanolin free ما يعني انه ال Lanolin خاير ولكن هي بيعملوها عشان الناس اللي عندهم حساسية
- the us of lanolin is limited by odor, expense and potential allergenicity



Lanolin is a good occlusive.



Is Lanolin comedogenic or not??

Humectants

- Water soluble materials with high water absorption capabilities
- They draw water into the skin causing a slight swelling of the SC that give the perception of smoother skin with fewer wrinkles
- They attract water from the atmosphere (if atmospheric humidity is greater than 80%) and from the underlying epidermis *or from the product itself.*
- They work better when combined with occlusives
- They also prevent product evaporation and thickening
- E.g. glycerin, sorbitol, sodium hyaluronate, urea, propylene glycol, α -hydroxy acids, and sugars

نحن بالأردن الرطوبة ما
بتوصل لها النسبة

طبعاً لاننا دائماً نستخرج occlusive مع ال humectant بالمستحضر ، لأنه لما ال humectant يسحب الماء سواء من الجو أو من طبقات الجلد الداخلية للزئ يكون في طبقة عازلة كالطبقة الخارجية تساعد على حفظ الماء داخل ال SC وتمنع تبخره ، فإذا ال occlusive مش موجود رح يسحب ال humectant الماء من طبقات الجلد الداخلية وبس يطلع لنفوس رح يتبخر ورح يعمل مع الوقت جفاف بالجسم .



Humectants: Glycerin

- A strong humectant and has a hygroscopic ability that closely resembles that of NMF (Natural Moisturizing factor)
- Natural product from soap production لما تمنع صابونة نابلسية بالطريقة التقليدية رج يطلع على الصابونة مادة صلبة من الـ glycerin
- Long history of safe use
- Effective treatment for dry skin at 5% and higher
- Two high glycerine moisturizers were compared by Orth et al. to 16 other popular moisturizers in 394 patients with severely dry skin. The high glycerin products were superior to all other products because they rapidly restored dry skin to normal hydration. They also helped prevent the return to dryness for a longer period than the other formulations (Orth D & Appa Y. Glycerine: a natural ingredient for moisturizing skin, 2000)
لما بدى أعمل assessment للمادة كـ moisturizer بهتم لشغلين
moisturizing effect ← قدرته على الحفاظ على رطوبة الجلد بعد إيقاف استخدامه.

Humectants: Urea

- It is a component of the NMF
- Humectant and mild antipruritic effect
- Exfoliating properties
- In larger concentrations, it may cause sensitivity
- 3% and 10% urea cream was more effective in dry skin than the vehicle control

$\geq 5\% \rightarrow$ for legs.
 $< 5\% \rightarrow$ for face (not recommended).



			specifications.	
Urea	57-13-6		a) Cosmetics intended to be diluted in bath water	
			b) Other cosmetics	b) 10%
Urea (carbamide) peroxide	124-43-6		See " Peroxide and peroxide-generating compounds "	

- The CIR Expert Panel did note that Urea can *→ Urea is a permeation enhancer.* increase the percutaneous absorption of *→ Like allegins.* other ingredients and that this should be taken into account when conducting product safety assessments.
- Urea is *→ Contraindicated* CI in neonates due to risk of systemic absorption

Humectants:

Hydroxy Acids

مع أحماض الفواكه

- α -Hydroxy acids are a family of naturally occurring organic acids that function as humectants as well as having exfoliating properties
هي مواد طبيعية يتم استخلاصها من الفواكه لكن المستخدمة فعليًا في المستحضرات هي مركبات تم تصنيعها بالمختبر وليس
الفعالية
- Glycolic acid (sugar cane) and lactic acids (sour milk)
قصب السكر
- Other: malic acid (apples), citric acid (acid fruits), and tartaric acid (grapes)

Humectants: Hydroxy Acids

- They promote desquamation
عملية التخلص من خلايا الجلد الميتة
- Research suggests that prolonged use of AHAs may increase skin photosensitivity
- It is known that exfoliants lower the MED of the skin
*the minimal dose of UV light required to cause erythema in your skin
→ that means that your skin will be more sensitive for the sun.*
- Use in conjunction with sun protection
ينصح باستخدامه كعلاج لمشكلة معينة مثل استخدام يوم

FDA studies on short term photo-toxicity An investigation of the effects of topical treatment with an α -hydroxy acid (AHA) on the sensitivity of human skin to UV-induced damage

The conclusion of this study was that treatment of the skin daily with a 10% glycolic acid preparation at pH3.5 for 4 weeks resulted in a significant increase in the sensitivity of normal skin to the damaging effects of UVB as judged by a reduction in the MED and an increase in the numbers of SBC's. Sensitivity returned to normal 1 week after cessation of treatment.

↳ Sun Burn Cells

The data generated from the above study was reviewed by the FDA²². The verity of the statistical treatment and conclusions were confirmed. Additionally, note was made of two earlier studies coded 3800 and 3813. In study 3800, a 5 day mid back exposure to a 10% glycolic acid solution produced statistically significantly higher mean log(SBC's) than exposure to a moisturiser or no treatment. In study 3813, a 12 week mid back exposure to a 10% glycolic acid solution produced statistically significantly higher mean log(SBC's) than exposure to a moisturiser, sponge, vehicle, or no treatment. These results were consistent with the results of study 4275.



- AHAs are most effective at promoting cell turnover only in the un-ionized form. Maximum cell turnover is obtained at pH 3. Therefore, products containing AHAs stimulate the highest rate of cell turnover at a pH ranging from 2.8-4.8.

$\text{pH} \leq 3.5 \rightarrow \text{highly acidic} \rightarrow \text{for professional use} \rightarrow \text{عند طبيب الجلدية}$

Humectants:

Propylene glycol

Humectant agents

- Glycerin (glycerol)
- Honey
- Sodium lactate
- Ammonium lactate
- Urea
- Propylene glycol
- Sodium pyrrolidone carboxylic acid (sodium PCA)
- Hyaluronic acid
- Sorbitol
- Polyglyceryl methacrylate
- Panthenol
- Gelatin

Box 14.3 Humectant agents

- An odorless liquid that functions as both a humectant and an occlusive
- May be irritant under occlusive patches → not a concern in cosmetics
هون لازم أننبه انه ما بقدر استخرمه بمستحضرات علاج ال diaper rash عند الأطفال.
- The consumer with damaged barrier were at higher risk developing irritation reactions
- Can also increase percutaneous absorption → works as permeation enhancer

Emollients

← زي الملسية اللي بنستخرها بالدهان

- They soften and smooth the skin
- They fill the spaces between desquamating corneocytes to create a smooth surface
- Leads to a smoother surface with less friction and greater light refraction
- Many emollients function as humectants and occlusive moisturizers
- Lanolin, mineral oil, and petrolatum: occlusive and confer emollient effect

Emollients

- Long chain alcohol (e.g. cetyl alcohol, stearyl alcohol)
- Ester type emollients (e.g. octyl stearate, isopropyl myristate, oleyl oleate)

Compounds with emollient properties	
■ Diisopropyl dilinoleate	■ Dimethicone
■ Isopropyl isostearate	■ Cyclomethicone
	■ Isopropyl myristate
	■ Octyl octanoate
■ Castor oil	
■ Propylene glycol	■ Isopropyl palmitate
■ Octyl stearate	■ Decyl oleate
■ Glyceryl stearate	■ Isostearyl alcohol
■ Jojoba oil	

Box 14.4 Compounds with emollient properties

Collagen and Polypeptide Ingredients

- Many expensive moisturizers contain collagen
- Some manufacturers claim that collagen in such moisturizers can replace the collagen that is lost during aging process *→ this is wrong.*
- Most of the collagen extracts have a MW of 15,000 to 50,000 daltons
- Only substances with a MW of 5000 daltons or less can penetrate the SC

Collagen and Polypeptide Ingredients

- The collagen and other hydrolyzed proteins and polypeptides leave a film on the skin that fills in the surface irregularities
- After the product dries, the protein films shrink slightly causing a subtle stretching out of fine skin wrinkles
- This effect is temporary and can be enhanced with the addition of humectants to further temporarily plump out the tiny wrinkles
- These products are usually labeled as firming creams as well as moisturizers
- They have little effect on TEWL



كلمة filler هي عملوا عليها قضية بأمریکا لشركة لوريال
لأنهم الناس فكروا انهم رح تعطي نفس تأثير ابر ال filler
فرفضوا عليهم قضية انهم بيخضعوا بالناس.



TABLE 20-1 Pros and Cons of Hyaluronic Acid

PROS

- Strong humectant → but weaker than glycerin.
- Nonimmunogenic
- Forms reservoirs in the epidermis
- May effect cytokines
- Enhances drug delivery
- Various biological/medical applications

CONS

- Penetration into skin depends on size
- Does not penetrate into the dermis
→ So it can't compensate the hyaluronic acid that been lost from the skin.
- High consumer recognition
- Dehydrates skin in a dry environment
→ must be used with occlusive.

Reproduced from Cosmeceutical and Cosmetic Ingredients by Leslie Baumann, 2015

كانوا زمان يستخرجوه من عرق الديك اللبي لونه أحمر لكن حاليًا صاروا يصنوه باستخراج الـ biotechnology.

2 minute read · September 27, 2022 9:23 PM GMT+3 · Last Updated a month ago

L'Oreal to face lawsuit over wrinkle-smoothing collagen claims

By Jonathan Stempel



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L'Oreal to face lawsuit over wrinkle-smoothing collagen claims

By Jonathan Stempel

NEW YORK, Sept 27 (Reuters) - L'Oreal SA ([OREP.PA](#)) on Tuesday failed to persuade a U.S. judge in Manhattan to dismiss a proposed class action lawsuit accusing the company of defrauding shoppers by suggesting that two topical collagen products help smooth wrinkles.

The plaintiffs Rocio Lopez and Rachel Lumbra sued in August 2021, claiming that L'Oreal violated New York and California consumer protection laws by deceiving them into overpaying for its Collagen Moisture Filler Day/Night Cream and its Fragrance-Free Collagen Moisture Filler Daily Moisturizer.

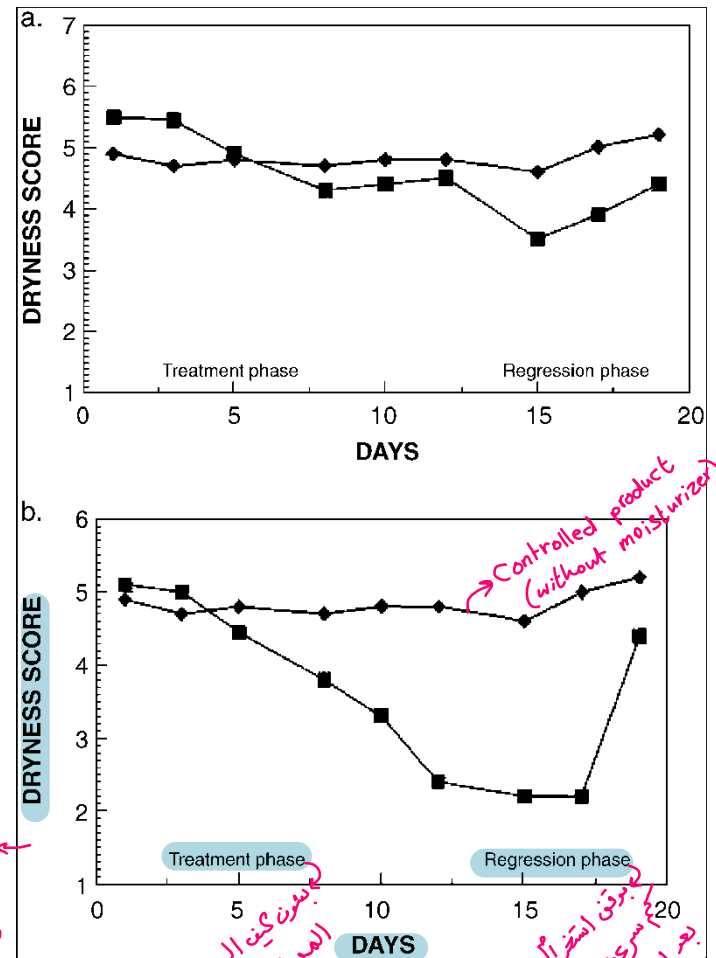
According to the complaint, topically applied collagen is too large to be absorbed by the epidermis, the uppermost layer of skin, making the products incapable of helping "smooth wrinkles" and "restore skin's cushion" as the labels suggest.

L'Oreal sought a dismissal, claiming it did not say a moisturizer containing collagen would penetrate the skin or stimulate collagen production, and that reasonable consumers would not believe otherwise from the products' names.

Combination approaches

- Most moisturizers contain a combination of emollients and humectants. *and occlusives.*
- A synergistic alleviation of dry skin can be achieved by combining glycerol with a mixture of lipids (1% Phospholipids, 2% Cholesterol, 1% Stearic acid)

هذه دراسة تظهر تأثير استخدام Combination من ال glycerol وال lipid على ال dry skin ، فوجدوا انه قلل من ال dryness بنسبة مئيه خلال فترة استخدامه وبرهنه قدر يحافظ على مفعوله لفترة مئيه بعد ايقاف استخدامه .



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Curel Therapeutic Moisturizing Lotion is clinically proven to deliver superior* moisturization. Its unique cationic formula penetrates deeply to rehydrate dry skin.

- **Moisturizes and heals** dry skin by working with your body's own moisture to restore the skin's natural moisture balance
- **Provides 12 hours of moisturizing effectiveness**
- **Absorbs quickly and completely** leaving no greasy residue

Non-Greasy • Will Not Clog Pores • Gentle Enough to Use on the Face

*Compared to leading lotions

Directions: Apply as needed to dry skin. Re-apply often to especially rough, chapped areas. For external use only.

INGREDIENTS: WATER, GLYCERIN, DISTEARYLDIMONIUM CHLORIDE, PETROLATUM, ISOPROPYL PALMITATE, CETYL ALCOHOL, DIMETHICONE, SODIUM CHLORIDE, FRAGRANCE, METHYLPARABEN, PROPYLPARABEN.

preservative.

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How to select a moisturizer?

- **1. Skin type:**

- ***Dry facial skin:***

Oily moisturizers containing occlusive components in addition to humectants are required

- ***Oily facial skin:***

does not need a moisturizer (except at times when the face becomes dryer due to external factors i.e. seasonal change)

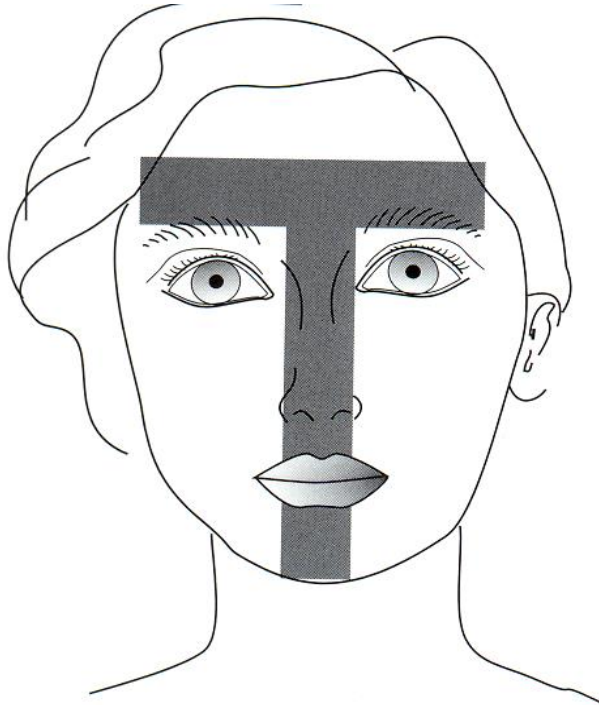
من لو بشره دهنية لا يعب مش بحاجة لمرطب لأنه ممكن يكون هاجز البشرة غير قادر على الحفاظ على نسبة مناسبة من الماء بالبشرة
لما بدي أصنف مستحضرات ترطيب لبشرة دهنية. حاول انه يكون less Lipid و more humectant وبستخرم gel

- ***Combined facial skin:***

vehicle بدل ال emulsion .

Avoid applying moisturizers in the T-zone

On the rest of the face, use non-oily products



*The T-zone: forehead, nasal bridge, nose
and centre of the chin.*

How to select a moisturizer?

- **2. The product's texture:**

- A product that is not pleasant to the touch (i.e. feel sticky or oily) should not be selected

- **3. Additives:**

- Fragrances and preservatives
- Hypoallergenic preparations

How to select a moisturizer?

■ **4. Sunscreens:**

- No need for moisturizer containing sunscreens for evening or night use
- Moisturizers with sunscreen for daytime

■ **5. Exotic ingredients:** يمكن إضافتها لكنها غير أساسية

- Vitamins
- Proteins
- *Exotic ingredients are not superior to conventional compounds in retaining skin moisture*

How to select a moisturizer?

- Selection is subjective in most cases
- Water based formulas for oily skin (lotion or gels)
- Products with humectants only is not enough for dry skin → it may worsen the condition too (use humectant with occlusive)

Does oily skin need moisturizer?

- Especially after using skin care products that remove oils and dry out the skin
- Look for water-based non-comedogenic formulation

Guidelines for use of moisturizers:

- Individuals with dry skin should avoid frequent washing of the face with soap → لأنه يـجـزـب حـاـمـز الـبـشـرة
- Apply moisturizers after skin cleansing
- Frequency of application determined according to skin type: Dry skin → more frequent application
- Moisturizers that contain relatively large amounts of water (liquid emulsions or creams) should not be applied just before exposure to cold weather → evaporates water → cooling effect → may harm facial skin
- Apply the moisturizer 20 minutes before exposure to cold, dry weather

What is the difference between moisturizers for the face and those for the rest of the body?

- There is no significant difference between them
- Applying moisturizer to the body involves much larger areas:
liquid emulsions vs. creams
Not a rigid rule

بالعادة المستحضرات المهيئة لترطيب الجسم تكون *less viscous* وتميل أكثر إلى الـ *lotion* بس ما في *rigid rule* وبرضه مرطبات الجسم ما ينحط فيها *exotic ingredient* مثل الفيتامينات وغيرها، هي المواد بتكون معبودة بمستحضرات ترطيب الوجه.

What is the difference between day moisturizer and night moisturizer ?

إذا بس مرطب للجفان عادي مايفرق لكن اذا بدى أستخدمه فيه باشي تاني مثل
انه يكون فيه واقى شمس ← نهاري
انه يكون فيه niacinamide أو retinol ← ليلي
وبالعاده الليلى بيكون thicker

Do you know what is meant by?

- W/Si emulsion → for oily skin.
- Macroemulsion → the molecules in the product are in macro range
- Microemulsion → the molecules in the product are in micro range
- Nanoemulsion → the molecules in the product are in nano range
- W/O/W (claimed benefit? Sustained release and use of incompatible material in same formulation)
- What are the benefits of W/Si
 - For oily and sensitive skin
 - Silicone is noncomedogenic
 - Dry fast and leave the skin feeling smooth

يستخدم بالعادة في حالات diaper rash وهو من اسمه انه يعمل طبقة خارجية يحمي الجلد من التقرن لمواد مضره

■ Barrier creams?

- Are used to avoid unpleasant reactions and prevent irritant dermatitis
- Debatable use with lack of evidence and may induce additional irritation
- w/o for preventing aqueous soln (heavier in occlusives and emollients compared to regular moisturizers (petrolatum jelly, lanolin, silicones as dimethicone)
زي مثل الـ urine, عند الأطفال اللي عنهم diaper
- For oil protection: non-oil soluble film formers as gum acacia or sodium alginate can be used with glycerin as plasticizer to the gum film
مكراتنا اللي بنسخلو بالميكانيك دائما يكون عنهم eczema

Are they considered cosmetics or drug in USA



Are they considered cosmetics or drug in USA

- Mineral oil, petrolatum and dimethicone are listed in the OTC monograph for skin protectants
- The monograph specifies the ingredients that can be used with their individual concentration
- If the conc of the ingredient falls into the specified range, the formulations are considered OTC drugs in the US

■ Do we need coloring agent in face moisturizer? No

■ Tinted? Contain ferric oxid ?

ممکن وفعليا في مستحضرات بالسوف يكون مرطب وبنفس الوقت فيها لون
ويعمل طبقة مثل ال foundation

Summary

- The ultimate purpose of all moisturizers is to enhance the hydration state of the SC
- Occlusives coat the SC and reduce water loss
- Humectants attract water from the atmosphere and from the underlying epidermis to hydrate the skin
- Emollients soften and smooth the skin
- Correlation of specific formulations with “skin type” is important

Summary:

- Moisturizers are made compatible with skin type by adjusting oil-water ratios and the occlusive ingredients
- The skin tends to dry with age
- An individual who did not require moisturizers in the past may require them later in life.
- Seasonal changes may cause one to feel a need for moisturizers such as in winter

Summary:

- **Ingredients causing safety concerns regarding skin moisturising products include fragrance, lanolin, urea, propylene glycol, and herbal extracts**

- Hyaluronic acid in cosmetic formulas
(personalcarescience.com.au)