

授課講師學經歷

姓名	趙振瑞
課程名稱(主題)	營養與美容保健
服務單位(包含職稱)	臺北醫學大學保健營養學系教授
學歷	美國俄亥俄州立大學人體營養與食品管理系博士
經歷	臺北醫學大學保健營養學系教授、國際學術交流中心主任

授課內容摘要

近年來醫學美容風氣於台灣相當盛行，相關商品更受到廣大消費族群的喜愛。透過醫學美容種種技術或治療可重新塑造人體正常的結構，改善病人的外觀及幫助病人建立自信心，不僅僅是身體外觀的改變，心理及社會層面也將有正面的效果。

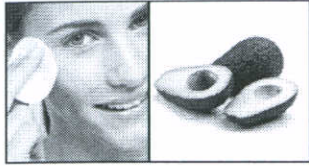
正常皮膚生理構造分為表皮(epidermis)、真皮(dermis)及皮下結締組織(subcutaneous tissue, hypodermis)，表皮由皮膚的表面往下分為角質層、透明層、顆粒層、棘狀層、基底層五個部份，表皮內有三種含分枝突出細胞：黑色素細胞、蘭氏細胞、莫克氏細胞。而真皮層中結締組織纖維有三種，包括膠原蛋白纖維(collagen fibers)，彈性纖維(elastic fibers)及網狀纖維(reticular fibers)，真皮層裡還有皮脂腺、汗腺、毛囊和些許微小的肌肉及神經細胞。

保濕劑依性質可分為油性保濕(鎖水劑)，如：荷荷芭油(jojoba oil)、凡士林(petrolatum)等，水性保濕(增濕劑)，如：玻尿酸(hyaluronic acid; HA)、膠原蛋白(collagen)等。食物中可讓皮膚保濕性增加的有：迷迭香蜂蜜、 ω -3 脂肪酸、菠菜、富含抗氧化物的漿果類及維生素 C 等。乾性肌膚的人建議多吃蔬果、穀物或堅果類。

常見美白成分經常是由黑色素還原作用、抑制酵素(酪胺酸酶)活性、離子(銅)螯合作用、破壞黑色素細胞、促進表皮黑色素代謝達到美白功效。其中美白商品中明星成份-果酸(α -hydroxy acid; AHA)就是藉由促進表皮黑色素代謝進而去除表皮的老廢角質，依濃度不同可分為市售級和醫療級。

面膜 DIY-優格面膜(一茶匙蜂蜜、一顆蛋黃、一茶匙杏仁油或初榨橄欖油、一茶匙優格)和蜂蜜面膜(一顆雞蛋、半顆檸檬、一茶匙蜂蜜)，自製面膜經濟方便，又可達到緊實、保濕及美白的多重功效。

營養與美容保健



趙振瑞

臺北醫學大學保健營養學系

99.03.28

1



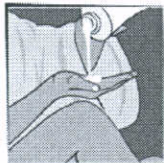
"Of course, there's a *possibility* that you are a swan, but do you want to take that risk?"

http://i1.bp.blogspot.com/_w8iO2BwFKX/Sl8W742_Aj/AAAAAAAAABK/MCdyFJvzyJGn40Gxcsmetic_surgery_cartoon.jpg

2

Content

- ❖ Introduction to aesthetic medicine
- ❖ Normal vs. abnormal skin structure
- ❖ Nutrition and moisturizers
- ❖ Nutrition and skin whitening
- ❖ DIY for facial mask



3

Aesthetic Medicine

- ❖ aesthetic surgery; cosmetic surgery; plastic surgery
- ❖ from cosmetic dermatological and hair procedure to body enhancement surgery
- ❖ reversal of anti-aging process

4

Goals

Conventional Medicine

- ❖ The science of diagnosing, treating, or preventing disease and other damage to the body or mind

Aesthetic Medicine

- ❖ Reshape normal structures of the body
- ❖ Improve the patient's appearance and self-esteem
- ❖ Not only for physical but also social and mental dimensions of health

5

Characteristics

- ❖ Performed to reshape normal structures of the body
- ❖ Initiated by the patients not on medical need
- ❖ Excludes reconstructive surgery



6

Plastic Surgery

- ❖ both cosmetic surgery and reconstructive surgery

Reconstructive Surgery

- ❖ Performed on abnormal structures of the body, which caused by congenital defects, developmental abnormalities, trauma, infection, tumor or disease
- ❖ Performed to improve functions

7

**Scientific and Evidence-Based Approach
Based on the knowledge and research in**

- ❖ Reconstruction surgery
 - ❖ ENT surgery
 - ❖ Dermatology
 - ❖ Pharmacology
 - ❖ Pharmaceuticals

8

Overlapping Fields

- ❖ Plastic surgeons
- ❖ Dermatologists
- ❖ General practitioners
- ❖ Dental surgeons
- ❖ ENT surgeons
- ❖ Head and neck surgeons
- ❖ Nurses
- ❖ Dietitians
- ❖ Cosmetologists
- ❖ Beauticians

9

Highlights in Aesthetic Medicine

- ❖ Injections of Facial Implants and Botulinum Toxin
- ❖ Chemical Peels
- ❖ Medical Cosmetology
- ❖ Aesthetic Mesotherapy
- ❖ Body Shaping and Cellulite Control
- ❖ Nutrition
- ❖ Hair Transplant
- ❖ Hair Removal
- ❖ Skin Laser Therapy
- ❖ Aesthetic Venous Treatment
- ❖ Acne Treatments
- ❖ Microdermabrasion
- ❖ Infusion Therapies
- ❖ Liposculpture



10

Skin Profile

- ❖ make up to 12-15% adult's body weight
- ❖ each cm^2 has 6×10^6 cells, 5,000 sensory points, 100 sweat glands and 15 sebaceous glands
- ❖ consists of 3 layers: the epidermis (the outer layer), the dermis (true skin) and the subcutaneous (fat) layer

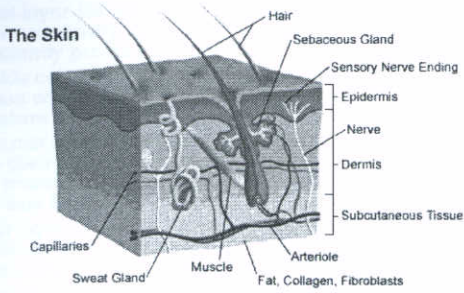
11

Skin Growth

- ❖ starts its life at the lower layer of the skin (the basal layer of the dermis)
- ❖ migrates upward for about 2 weeks until it reaches the bottom portion of the epidermis
- ❖ undergoes a series of changes in the epidermis, gradually flattening out and moving toward the surface (another 2 weeks)
- ❖ dies and is shed

12

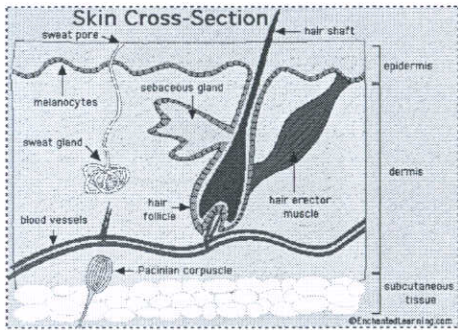
Normal Skin Structure



http://www.schneiderchildrenshospital.org/peds_html_fixed/images/ei_0390.gif

13

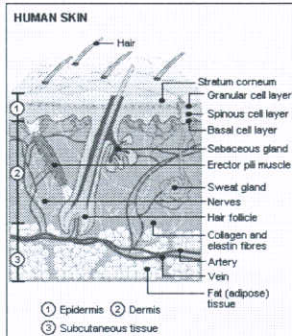
Normal Skin Structure



<http://www.enchantedlearning.com/subjects/anatomy/skin/crosssection.GIF>

14

Normal Skin Structure



<http://www.razor-gator.com/SkinAcidsPhotos/skinstructure.gif>

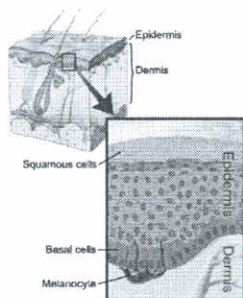
15

Epidermis

- ❖ Basal layer (*Stratum germinativum*) - The cells of this layer constantly been reproduced and the layers get constantly pushed up into the next layer
- ❖ Prickle cell layer (*Stratum spinosum*) - The cells have spines which prevent bacteria entering the cells and moisture being lost
- ❖ Granular layer (*Stratum granulosum*) - the prickle cells lose their spines and become flatter. The nucleus dies, and protein is formed called keratin preventing moisture loss and found in skin, nails and hair
- ❖ Clear layer (*Stratum lucidum*) - this layer is for cushioning and protection and is found only on the palms of the hands and soles of the feet
- ❖ Horny (cornified) layer (*Stratum corneum*) - the cells here are dead and ready to be shed (desquamation)

16

Epidermis



[http://www.caring4cancer.com/uploadedImages/Website-C4C-20/Skin_Cancer_\(Non-Meloma\)/The_Basics/Epidermis-dermis.jpg](http://www.caring4cancer.com/uploadedImages/Website-C4C-20/Skin_Cancer_(Non-Meloma)/The_Basics/Epidermis-dermis.jpg)

17

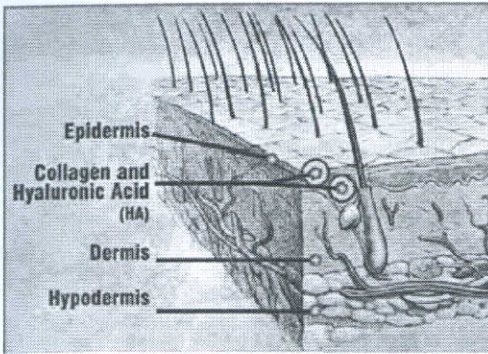
Dermis

- ❖ is the thickest of the skin layers and comprises collagen and elastin fibers
- ❖ responsible for the skin's structural integrity, elasticity and resilience
- ❖ the key type of cells in the dermis is fibroblasts, which synthesize collagen, elastin and other structural molecules
- ❖ contains capillaries (tiny blood vessels) and lymph nodes which produce immune cells
- ❖ contains sebaceous glands, sweat glands, hair follicles and a small number of nerve and muscle cells
- ❖ Wrinkles develop in the dermis



18

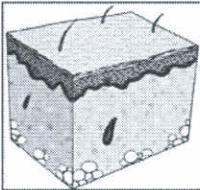
Collagen and Hyaluronic Acid



19

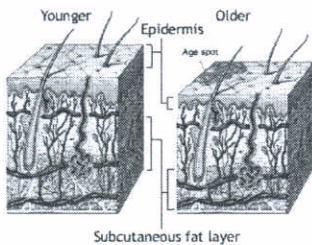
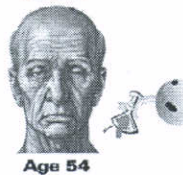
Subcutaneous Tissue (Hypodermis)

- ❖ consists mainly of fat cells
- ❖ acts as a shock absorber and heat insulator, protecting underlying tissues from cold and trauma
- ❖ the loss of subcutaneous tissue in later years, leads to facial sag and makes wrinkles more visible



<http://www.infoderm.com/images/as/skin/subcutaneous.jpg>

20

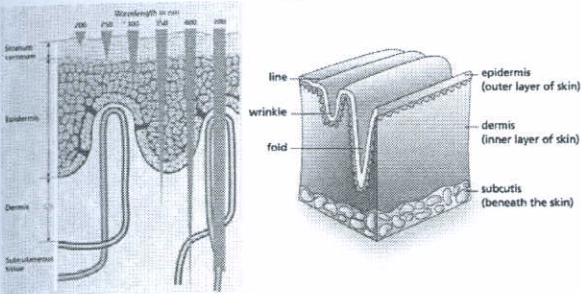


©ADAM

<http://www.cheerzhangover.com/images/Horrors-SkinAging-Ig.jpg>
<http://z.about.com/1/p/440/e/f/8690.jpg>

21

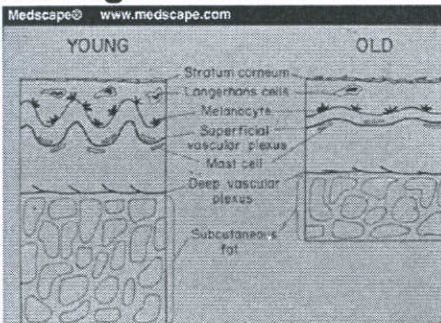
Damaged Skin



http://youngskin4me.com/wp-content/uploads/2009/12/skin_73_01.jpg
<http://www.light4beauty.com/images/LEDtechnologies/skin-structure.jpg>

22

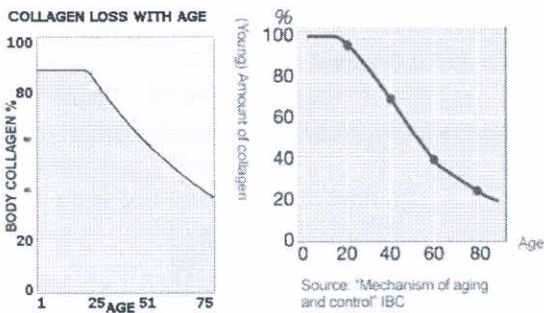
Damaged Skin Structure



<http://img.medscape.com/fullsize/migrated/407/579/w1303.02.fig1.gif>

23

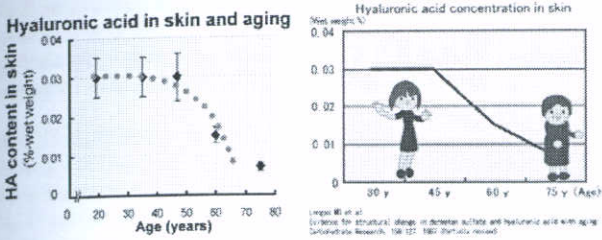
Changes in Collagen with Age



<http://www.hwize.com/collagen/collagen-graph.jpg>
<http://www.hyaluronicacidcream.net/wp-content/uploads/2009/10/collagen-skin-care-300x281.jpg>

24

Changes in Hyaluronic Acid with Age



<http://www.plthomas.com/system/images/HAvsAge.png>
http://www.seikagaku.co.jp/english/ha/img/chap2_2_01.gif

25

去角質
清潔
彩妝
隔離
防曬
保濕
美白

26

5 Tips to Keep Skin Moisture

- ❖ mineral water + paper mask (< 3 times/week)
- ❖ take facial spray with you (every 3-6 hours)
- ❖ 6-8 cups of water everyday
- ❖ seal in the moisture with appropriate cream or lotion
- ❖ say no to hot water, esp. in bathing



27

Moisturizers

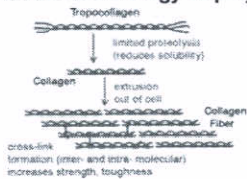
油性保濕(鎖水劑)~ 保水、修復皮脂膜~
 酪梨油(avocado oil)、月見草油(evening primrose seed oil)、
 小麥胚芽油(wheat germ oil)、橄欖油(olive oil)、荷荷芭油
 (jojoba oil)、玻璃苣油(borage oil)、夏威夷核果油(macadamia
 nut oil)、葵花油(sunflower oil)、凡士林(petrolatum)

水性保濕(增濕劑)~ 抓住水分~
 甘油(glycerol; glycerin)、玻尿酸(hyaluronic acid; HA)、胺基
 酸(amino acid)/胜肽(peptide)、膠原蛋白(collagen)、維生素原
 B₅(D-panthenol)、水解膠原蛋白(hydrolyzed collagen)、多元
 醇類(如丙二醇-propylene glycol)、尿素(urea)、低濃度果酸(α -
 hydroxy acid; AHA)、植物性萃取物(plant extract)

28

Collagen

- ❖ makes up 75% of our skin
- ❖ is made up of three polypeptide (α) strands
- ❖ glycoprotein containing galactose and glucose
- ❖ type I and III are predominate in the skin
- ❖ insoluble in water
- ❖ Combination with the technology of polypeptides

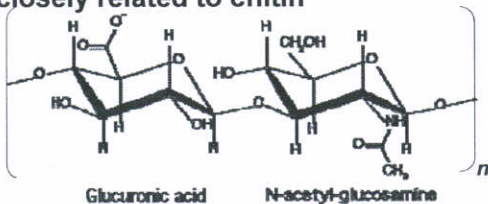


29

<http://labs.ansci.illinois.edu/meatscience/Library/collagen%20formation.gif>

Hyaluronic Acid

- ❖ glycosaminoglycan, can be several thousands of sugar long with a repetitive sequence of disaccharides
- ❖ is closely related to chitin



30

<http://www.madsci.org/posts/archives/apr2001/986571103.Bc.1.gif>

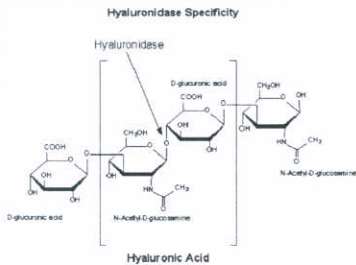
Hyaluronic Acid

- ❖ a natural substance found in great abundance in young skin, synovial fluid, and connective tissue
- ❖ oxy-radicals, produced mostly through exposure to pollutants and sunlight, degrade and destroy hyaluronic acid
- ❖ middle-aged adults are estimated to have less than half the hyaluronic acid they had in youth
- ❖ can hold hundreds of times its weight in water
- ❖ a sticky and thick substance with rather large molecules
- ❖ very little of it (or none whatsoever) can be absorbed into the skin
- ❖ prevents the evaporation of water from the skin
- ❖ often used in conjunction with vitamin C products to assist in effective penetration

31

Phytessence Wakame

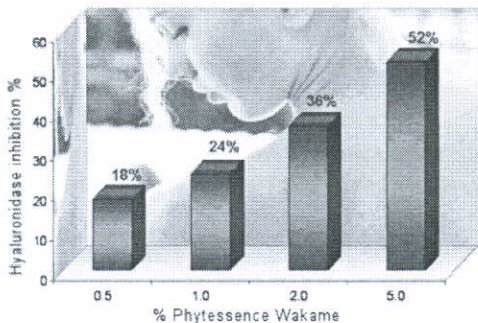
- ❖ extracted from Japanese seaweed
- ❖ as a hyaluronidase inhibitor



http://www.sigmaaldrich.com/etc/medialib/life-science/biochemicals/migrationbiochemicals1/hyaluronidase_hyaluronic_ac.Par.0001.Image.540.540.gif

32

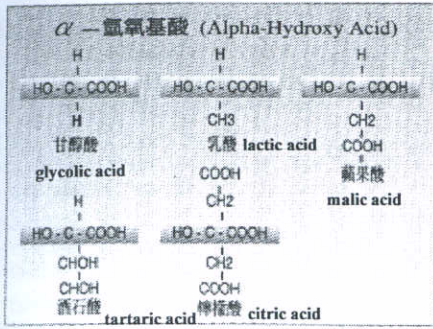
Phytessence Wakame



<http://beautiful-healthy-skin.com/wp-content/uploads/2009/02/phytessence.gif>

33

α-Hydroxy Acid



果糖的種類有很多，不過，它們都有一個共同的化學結構。

34

α-Hydroxy Acid

- ❖ water-soluble and found in a variety of skin care products including moisturizers, cleansers, eye cream, sunscreen, and foundations
- ❖ in a moisturizer base may be the best combination of products
- ❖ work best in a concentration of 5%-8% and at a pH of 3-4
- ❖ sold to consumers: < 10%
- ❖ trained cosmetologists: 20%-30%
- ❖ Doctors: 50%-70% for chemical peels

35

Foods that Moisturize Skin

- ❖ rosemary honey (*Jiménez Soriano et al. 1999*)
- ❖ omega-3 fatty acids (i.e. salmon, walnuts, flaxseed oil)
- ❖ spinach
- ❖ berries – with antioxidants and vitamin C
- ❖ tea polysaccharides/polyphenols (*Wei et al. 2009*)
- ❖ *Saccharomyces cerevisiae* (啤酒酵母) extract (*Gaspar et al. 2008*)
- ❖ vitamin C + wheat protein (*Akhtar & Yazan 2008*)
- ❖ rice-derived ceramide (*Asai & Miyach 2007*)

36

Diet Recommendations for Dry Skin

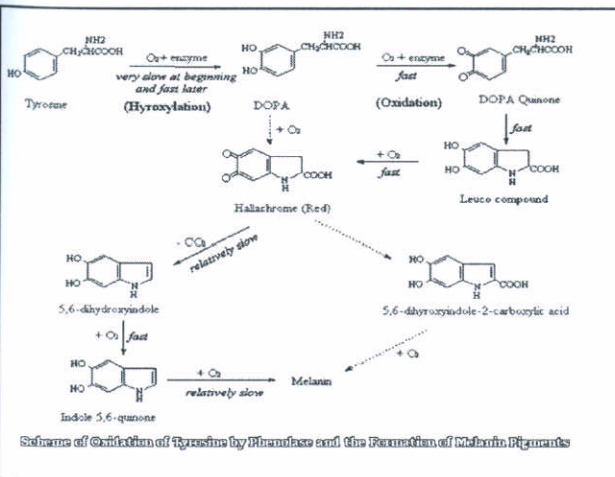
- ❖ ✓ eat a balanced diet that includes vegetables, fruits, grains, seeds, and nuts
- ❖ ✓ eat quality protein from vegetable sources. Increase your intake of raw foods
- ❖ ✓ eat foods such as garlic, onions, eggs, and asparagus that are high in sulfur, which helps to keep the skin smooth and youthful
- ❖ ✓ consume plenty of yellow and orange vegetables. These are high in beta-carotene, an antioxidant (i.e. carrots)
- ❖ ✓ cantaloupes, carrots and apricots (rich in the vitamins A and C)

37

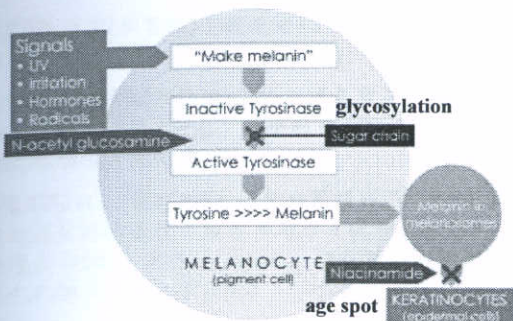
Diet Recommendations for Dry Skin

- ❖ ✓ eat foods rich in pantothenic acid (vitamin B5), such as cheese, natural plain yogurt, leafy green vegetables, nutritional yeast and wheat germ
- ❖ ✓ drink at least 2 quarts (~2 L) of quality water every day
- ❖ ✗ fried foods, animal fats, and heat-processed vegetable oils
- ❖ ✗ soft drinks or eat sugar, sweet chocolate, potato chips, or other junk foods
- ❖ ✗ alcohol and caffeine (a diuretic effect)

38



Inhibition of Pigmentation process



<http://www.eurekaalert.org/multimedia/pub/1368.php>

40

	物理性	化學性
作用	在皮膚外覆蓋一層防護層，以反射、散射紫外線來阻止UVA及UVB傷害	吸收紫外線來達到防曬效果，可吸收UVB，但只有部分成分會吸收UVA
成分	Zinc oxide(ZnO)氧化鋅 Titanium dioxide (TiO2) 二氧化鈦 Red petrolatum 紅色凡士林 Anthranilates 胺基苯甲酸鹽	對胺基苯甲酸 Para-aminobenzoic acid (PABA) PABA ester (Padimate-O) 對胺基苯甲酸酯 Benzophenone 二苯甲酮 Cinnamates 桂皮酸鹽類 Salicylates 水楊酸鹽
優點	對UVA及UVB都有很好的防曬作用	清爽、透明無色
缺點	擦起來較厚，不舒服，而且大部分有顏色	對陽光敏感者容易因吸收劑刺激而產生濕疹、發癢、紅腫

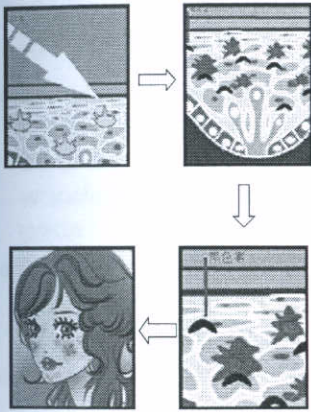
美白

- 黑色素還原作用
維生素C
- 抑制酵素(酪胺酸酶)活性，降低黑色素生成
對苯二酚(hydroquinone)←熊果素(arbutin)水解產物
- 離子(銅)螯合作用，降低黑色素生成
麴酸(kojic acid)
- 破壞黑色素細胞
利用自由基破壞細胞膜，使對苯二酚氧化成自由基
- 促進表皮黑色素代謝
果酸(α -hydroxy acid; AHA)，去除表皮的老廢角質⁴²

果酸的使用

- 濃度3%以下(市售級)：促使老化角質層脫落(功能：保濕效果)
- 濃度在3%至8%(市售級)：能加速角質及少部分上層表皮細胞更新的速度(功能：以達到預防粉刺或加速粉刺脫落的抗痘功能、淡化黑斑)
- 濃度10%以上(醫療級)：老化角質層脫落，加速角質、表皮細胞更新的速度，表皮層增厚，促進真皮層內彈性纖維增生(功能：治痘、除痘疤、淡化黑斑、抗皺的功能、解決毛孔粗大、黑色素淡化)

43



衛生署核可

1. 維生素C之磷酸鎂鹽 (magnesium ascorbyl phosphate; MAP)：濃度3%
2. 維生素C之葡萄糖苷(ascorbyl glucoside)：濃度2%
3. 維生素C之磷酸鈉(sodium ascorbyl phosphate)：濃度3%
4. 熊果素(arbutin)：濃度7%
5. 麴酸(kojic acid)：濃度2%
6. 鞣花酸(ellagic acid)：濃度0.5%

44

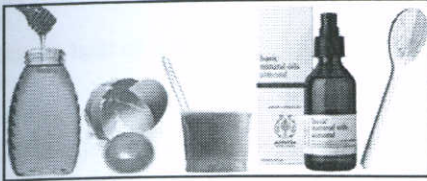
Growth Factors and Skin Care

Connective tissue growth factor	+ transforming growth factor β + type I procollagen synthesis
Epidermal growth factor	+ skin cell regeneration + healing of wounds
Keratinocyte growth factor	+ healing of wounds + collagen synthesis and maturation
Nerve growth factor	+ sensory sensitivity
Transforming growth factor $\beta 1$	+ healing of wounds + collagen and fibronectin synthesis - wrinkles
Vascular endothelial growth factor	+ healing of wounds + permeability of blood vessels

45

DIY for Yogurt and Honey Face Mask

- 1 tablespoon honey
- 1 egg yolk
- 1 teaspoon almond oil or extra virgin olive oil
- 1 tablespoon yoghurt



<http://www.fabsugar.co.uk/DIY-Honey-Yogurt-Face-Mask-2726128>

46

DIY for Yogurt and Honey Face Mask

- ❖ In a glass or aluminum bowl mix together the egg yolk, honey, yogurt and almond oil or extra virgin olive oil. Still with a wooden spoon until all of the lumps are gone
- ❖ Smooth the mixture all over your face and neck. Relax and let it sit on your skin anywhere from 10 to 15 minutes
- ❖ Rinse off with warm water and pat dry

47

DIY for Brightening/Firming/Moisturizing Face Mask

- 1 egg
- 1/2 lemon
- 1 teaspoon honey

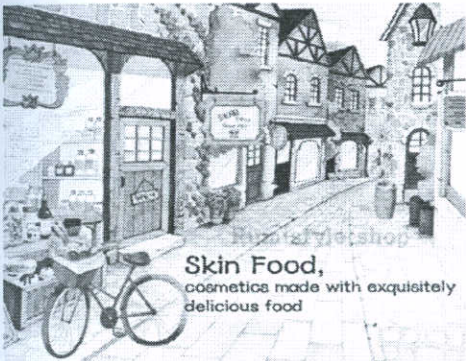


48

**DIY for Brightening/Firming/Moisturizing
Face Mask**

- ❖ cracking one egg, separate the egg yolk from the egg whites (firming) and place the egg whites in a bowl
- ❖ put a teaspoon of honey (moisturizing) into the bowl
- ❖ squeeze a half of a lemon (brightening) into the bowl
- ❖ mix all the ingredients well
- ❖ apply the mixture to face and neck with your fingers or a brush. Leave the mask on until dry, around 10 to 12 minutes

49



<http://asuokr.cafe24.com/cosmetics/skinfood/Skin-Food-main.gif>

50
