Skin Disorders

Spots
Skin is an organ of detoxification.
When other detoxification systems not working the body expels toxins through the skin.

Spots
Start as hard lumps under the skin, resulting in pus, infection from inside
Something coming out from inside, most likely intestines
Foods often the culprit

Spots
Aspartame destroying bacteria in gut
180mg aspartame in one diet coke
Msg probably does the same
Teenagers high consumption plus bad fats – normal diet

Hahnemann
Strong connection between the skin & internal disease.
The skin being a reflection of what is happening within.
Emotions are reflected on the skin, anger with flushing, fear with paleness, embarrassment.

Hahnemann
Affected by malnutrition, malabsorption, imbalances metabolic & endocrine disorders.
The skin is intimately connected with the whole & reacts in accordance with the whole.

Hahnemann
Disease expresses itself with a centrifugal force & throws off illness by expressing it in the skin. When this expression is suppressed , eg with steroids, the disease is driven further inwards & to the vital organs.

Hahnemann

The human skin is not separate to the whole and any disease on the skin is not about the skin alone.

Content for Today
Structure of Skin
Dry skin, scalp
EFAs, bad fats
Collagen
Patient Protocol introduction
Causes of skin problems
Eczema
Allergy
Contact Dermatitis

Content for Today
Hormone related conditions – acne, PMS
Autoimmune conditions – psoriasis
Little gems
Patient Protocol

Structure of the Skin

Epidermis

Dermis

Subcutaneous layer

Lpi.oregonstate.edu./mic/other-nutrients/essential-fatty-acids

Overview - Structure of the Skin 2 main layers

The epidermis is comprised of keratinocytes in varying states of differentiation & primarily serves a barrier function

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Overview - Structure of the Skin
2 main layers

Preventing water loss & invasion by microbes & toxins.
The main function of the dermis is to provide physical & nutritional support to the epidermis.

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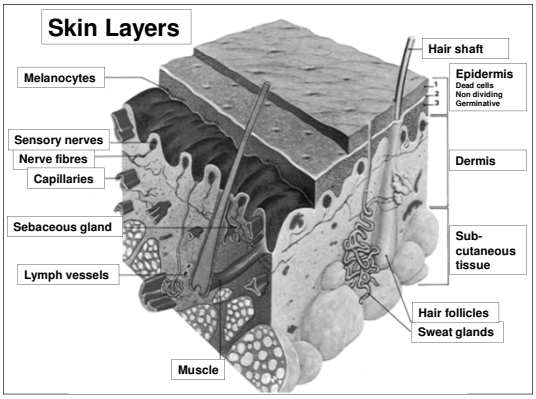

Epidermis – Outer Barrier

Keratinocytes compose 95% cells. The bottom/basal layer consists of a layer of round, undifferentiated keratinocytes that is supported by contact to the underlying dermis.
Cells constantly dividing to produce new cells that make up

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Epidermis – Outer Barrier

the remainder of the layers. So in this way the skin is replenished , with new cells from the basal layer replacing the outer layer of skin cells that is shed over time.

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Epidermis – Outer Barrier

Keratinocytes make structural protein keratin – key structural material making up the outer layer of skin & hair.
They secrete a variety of lipids that will comprise key components of the epidermal barrier.

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Epidermis – Outer Barrier

The outermost layer of the skin, the stratum corneum, interacts with the outside environment. Lipids secreted by cells during keratinisation process are assembled with extracellular proteins into a protective layer.

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Epidermis – Outer Barrier

The chemical properties and structural design of this layer slow absorption & limit penetration of the skin, as well as limit the loss of vital nutrients & water.

Linus Pauling Institute

Epidermis – Outer Barrier

Other cells contribute to the function of the epidermis. Melanocytes produce melanin, involved in skin pigmentation produced in response to UV light exposure. Melanin can absorb energy from UV to protect underlying tissues.

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Epidermis – Outer Barrier

Langerhans cells are antigen-presenting cells involved in epidermal immunity.

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Summary - Structure of the Skin Epidermis

There is no blood supply to the epidermis, hardly any nerve supply.

Receives nutrients and fluids from the lymphatic vessels in the dermis.

5 layers in the epidermis

An introductory Guide to Anatomy & Physiology Louise Tucker

Summary - Structure of the Skin Stratum Basal

Cells are made in this layer.

They take about 28-30 days to move from here through the 5 layers before being shed.

Contains pigment melanin, give skin its colour. Produced by melanocytes.

Introduction to Anatomy & Physiology. Louise Tucker

Stratum corneum

Substances can be transported across the SC – xenobiotics.

Major cause of skin & hormonal problems.

60% of what is put on the skin is absorbed.

Also can be used therapeutically.

Iodine skin test

-½ hour	5 drops
½ - 1 hour	4 drops
1 – 2 hours	3 drops
2- 4 hours	2 drops
4 + hours	1 drop

Dermis – Inner Support

Situated between the epidermis & other tissues – subcutaneous fat, muscle & bone.
Approx. 10x thicker – epidermis
75% weight of dermis is a matrix of collagen – extracellular protein that allows for structural support, elasticity

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Dermis – Inner Support

Primary role is a mechanical support network for epidermis, providing integrity & flexibility.
Contains blood vessels that supply nutrients to all layers of the skin.

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Dermis – Inner Support

Majority of cells are fibroblasts that synthesize structural proteins like collagen.
Immune cells, monocytes, macrophages, dermal dendrocytes – contribute to defence of skin & modulate the response to injury.

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Dermis – Inner Support

Subcutaneous fat cells provide structural support & energy reserves and thermoregulation.
Hair follicles, sensory nerve endings, sweat & sebaceous glands – that support the various functions of skin.

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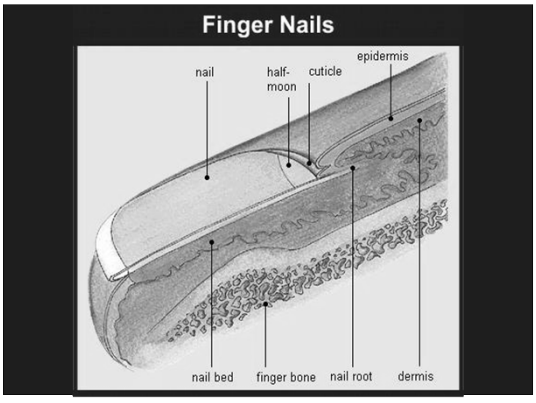

Nails and hair have the exact same composition...nails are just compacted strands of cells exactly the same as hair, but again compacted together, not left in strands as hair is....

Vitamin D synthesis

UV penetration of the skin aids in Vitamin D synthesis.
Potential to damage cells & extracellular components skin.
Free radicals are produced when light energy is absorbed by cellular components.

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Structure of the Skin
The Dermis

This layer is connected to the blood & lymph supply & nerves.
Contains sweat & sebaceous glands, hair follicles & many living cells.

An Introductory guide to Anatomy & Physiology. Louise Tucker. Ruben Publsihing Ltd 2000

Structure of the Skin
Structure of the Dermis

Made of connective tissue, mainly areolar tissue which is tough and elastic

Contains white collagen fibres and yellow elastic tissue – elastin. Collagen – plumps, elastin – supple & elastic

An Introductory guide to Anatomy & Physiology. Louise Tucker. Ruben Publsihing Ltd 2000

Structure of the Skin
Specialised cells

Fibroblasts – produce collagen and elastin. Can be damaged by UV light

Mast cells – produce histamine as an allergic response. Heparin and anti-coagulant

Histiocytes – produce histamine

An Introductory guide to Anatomy & Physiology. Louise Tucker. Ruben Publsihing Ltd 2000

Structure of the Skin
Specialised cells

Leucocytes – white blood cells which help to fight infection and disease.

An Introductory guide to Anatomy & Physiology. Louise Tucker. Ruben Publsihing Ltd 2000

Types of Skin Problems

Rashes, hives, urticaria, dermatitis

Hormonal

Allergy. Dry skin, scalp

Spots/acne

Eczema, psoriasis

Dry Skin

<u>Dry Skin</u>

Although lower layers of epidermis are moist, there is a sharp decline in water content as the cells migrate to surface. By design, the hydrophobic environment in stratum corneum slows the passage of water from body to atmosphere.

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Dry Skin

Known as Trans Epidermal Water Loss (TEWL).

Since water loss is directly related to skin's ability to maintain its barrier function, skin dysfunction is linked to the TEWL.

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Dry Skin

However a small amount of water is needed for the stratum corneum to maintain its structure. A mixture of stratum corneum components form a water binding barrier, together known as Natural Moisturising Factor (NMF)

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Dry Skin

NMF retains moisture content even in dry environments.

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Dry Skin - Causes

Many Factors – usually accompanied by changes in the epidermis barrier & increased TEWL.

Intrinsic changes in the lipid barrier of NMF of stratum corneum can disrupt the barrier & cause water loss.

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Dry Skin - Causes

This can stem from chemical exposures such as washing detergents or from nutritional deficiency of EFAs.

Result from atmospheric conditions, temperature change. Humidity pulls water away from skin – reduce barrier.

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Dry Skin - Causes

Dry skin often predisposes it to insults from other sources, leading to cell damage & inflammation.

Need to support the skin nutritionally, underlying dermis and topical applications.

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Scalp

Contains sebaceous glands and hair follicles.

Connective tissue, layer of fat & fibrous tissues, nerves & blood vessels.

Rich in collagen & glycosaminoglycans (GAGs).

"Scalp: Nerve Supply. Medical mnemonic". LifeHugger. Retreived 2009-12-15

Scalp Dandruff

The process of producing new skin cells & shedding old cells is speeded up leading to patches of dead skin forming on scalp.

Dry skin.

Psoriasis or eczema.

Contact Dermatitis.

Nhs.uk/conditions/Dandruff

Scalp Dandruff like Conditions

Seborrhoeic Dermatitis – scaly, flaky, itchy, red skin.

Overgrowth of yeast in skin, cradle cap.

Tinea capitis – a fungal infection of scalp. Also called Scalp ringworm.

Nhs.uk/conditions/Dandruff

Scalp Dandruff like Conditions

A yeast like fungus (malassezia) lives on the scalp in most adults. But for some it irritates the scalp & can cause more skin cells to grow. Leading to excessive shedding of old cells.

Nhs.uk/conditions/Dandruff

Suggested nutrients - Dandruff

- **Smart Vitamin A**
- **P5P**
- **Fatty acids**
- **Vitamin E**
- **Selenium phosphate**
- **Zinc (if fungal)**

Dr George Goodheart

Sebum & Essential Fatty Acids

Sebum & EFAs

- **Secretes sebum from the sebaceous glands**
- **Fatty substance lubricates the hair shaft and when mixed with perspiration it creates a natural moisturiser, acts as a protective barrier against bacteria.**

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Fatty Acids

EFAs & Skin Health

Omega 3 & 6 PUFAs play a crucial role in normal skin function & appearance. Deficiency symptoms include scaly, dryness, itchy, redness. Also leads to increased TEWL which reflects the integrity of the barrier function.

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Deficiency of EFAs (EFAD)

EFAD characterised by hyper-proliferation of epidermis & dermis.

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Deficiency of EFAs (EFAD)

Dietary fats are absorbed across the intestines, processed by the liver for delivery to peripheral tissues. Delivered to the epidermis through cellular uptake by lipoprotein receptors & fatty acid transporters - keratinocyte

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EFAs & Skin Health

Addition of various EFA oils can modulate the inflammatory response in dermis & epidermis.
Help to reduce UV induced damage & extrinsic signs of aging.

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EFAs & Skin Health

2 Classes of EFA – omega 3, 6.
Linoleic Acid (LA)is the parent compound of n-6 PUFAs.
Alpha linolenic acid (ALA) is the parent of n-3 PUFAs.
From these the body makes longer chain fatty acids – important function in skin.

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Lipid Metabolism in the Skin

Diagram

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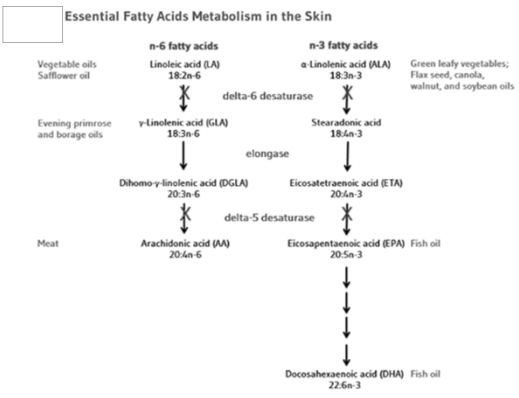

Lipid Metabolism in the Skin

EFAs must be obtained from the diet for the skin.

Unlike the liver, skin lacks the enzymatic activity required to convert LA & ALA to their long chain metabolites.

Skin deficient in delta-6 & delta-5 desaturase enzymes

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Lipid Metabolism in the Skin

These add the double bonds to the fatty acid chains

May need to supplement GLA, DHA .

The parent compounds give rise to longer chain derivatives – have physiological effect on skin.

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Lipid Metabolism in the Skin

Elongase activity is present in epidermis so DGLA can be made from GLA. DGLA possesses anti-inflammatory properties so can supplement GLA rich oils for inflammatory skin conditions.

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Epidermal lipids

In lower levels, EFAs incorporated into phospholipids in keratinocytes.
Corneocytes in SC are encased in a protein & lipid matrix providing the barrier function.
LA, most abundant PUFA in epidermis is inserted in SC.

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Epidermal lipids

LA controls the permeability barrier function.

Omega 3 serve as an important immunomodulatory role.

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Photoprotection of EFAs

UV exposure, even at levels that do not cause sunburn, causes cellular damage that induces inflammation & suppresses the immune system in the skin.
UV impairs T cell activation.
EFA provide an added layer of photoprotection.

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Photoprotection of EFAs

Omega 3 & 6 & their derivatives can affect the cellular response to UV.

The long chain fatty acids are very liable to oxidation so need to take Anti-oxidants.

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Photoprotection of EFAs

UV damages collagen.

Certain stimuli – UV, oxidative stress, inflammatory cytokines – stimulate enzymes that degrade collagen.

Pre-treatment with EFA inhibits these enzymes.

Hyperpigmentation. Flax/EPO

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Skin Sensitivity - EFAs

Studies into flax seed & EPO – attenuated inflammatory response to chemical irritants, decreased TEWL, reduced skin roughness & scaling.

EPO showed improved skin moisture, TEWL, elasticity, firmness & roughness.

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Skin Sensitivity - EFAs

Combinations of fatty acids.
Flax – rich source of ALA but contains LA & oleic acid.
Borage & EPO – rich in GLA, also contain LA & oleic acid.
Fatty acids not converted by skin – so can be considered nutritionally essential.

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Summary - EFAs & Skin Health

- **Barrier function**
- **Reducing TEWL**
- **Reduce inflammation**
- **Skin sensitivity**
- **Protect against UV damage**
- **Prevent the degradation of collagen**

Wound Healing - EFAs

Important due to EFAs role in structural integrity & modulation of inflammatory response.

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Ethane test for EFAs

If a person is deficient in unsaturated fatty acids they will produce Ethane. This is used in a breath test to indicate unsaturated fatty acid deficiency.

We use the test vial. If weak to the vial then test EFA products.

Linus Pauling Institute

EFA Products

Super omega 3
Omega 3 6 & 9
Flax seed oil capsules
Sea buckthorn capsules
Evening Primrose oil
Borage oil
Wheatgerm

Deficiency of EFAs (EFAD)

Topical application is an effective method of delivering EFAs to the skin.

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Wonder Sea Buckthorn Facial Oil

Organic Grape seed oil
Organic coconut butter
Organic Sea Buckthorn Extract
Organic Helichrysum essential oil
Organic Sandalwood essential oil

Organic Grape Seed Oil

Light, thin, easily absorbed
Contains more LA than other oils, 70-80%.
Rich in Vitamin C, D, E.
Tightening skin, as a moisturiser balances dry & oily patches.
Polyphenols & antioxidants, reported to help acne.

Kamel, B. S.; Dawson H.; Kakuda Y. (1985). "Characteristics and composition of melon and grape seed oils and cakes". *Journal of the American Oil Chemists' Society*. **62** (5): 881–883

Organic Sea Buckthorn extract

Contains over 190 nutrients & phytonutrients.
High amounts of vitamins & minerals (Se), high in Vitamin C.
Vitamin E – same as wheatgerm
Vitamin A.
SOD – important enzyme to prevent free radical damage.

Articles.mercola.com

Organic Sea Buckthorn extract
Fully comprehensive blend of fatty acids.
Only plant source to contain Omega 3, 6, 9 and 7.
Omega 7 – palmitoleic acid.
Common constituent of adipose tissue, moisturises the skin.

Articles.mercola.com

Organic Sea Buckthorn extract
Dr Mercola
"Sea buckthorn promotes skin health. Both oral & topical applications have benefits on skin problems. It promotes skin hydration, elasticity, skin regeneration & even helps treat & prevent acne".

Articles.mercola.com

Organic Sea Buckthorn extract
Healing & rejuvenating effects on the skin.
Help heal burns, cuts, sunburn, rashes, other skin damage.
Nourishes the tissues in the skin.

Articles.mercola.com

Organic Helichrysum

Anti-inflammatory & anti-microbial skin helper.

Lowers inflammation by:

- **Inhibition of inflammatory enzymes.**
- **Free radical scavenging.**
- **Corticoid-like effects.**

Draxe.com

Organic Helichrysum

Thanks to its anti-inflammatory properties, it is used for scars to discourage inflammation & encourage healing.

Anti-allergenic – great remedy for hives.

Soothing & healing skin – redness, blemishes, rashes, acne, shaving irritation.

Draxe.com

Organic Sandalwood

Reduces inflammation from skin irritations such as superficial wounds, pimples, warts or boils.

Can be used for insect bites, contact irritations or other skin conditions.

Draxe.com

Organic Sandalwood

****** ANTI-AGING ******

High in anti-oxidants – can help reduce damage caused by free radicals which promote aging.

Treats dry skin.

Draxe.com

Beneficial aroma
Helichrysum – warm, strong, herbal, honey like fragrance.
Sandalwood – deep, soft, sweet, balsamic fragrance.
Mental clarity.
Calming & relaxing.

Draxe.com

Scarring
A consequence of the repair process resulting from disorganised deposits by fibroblasts & cytokine signals from inflammatory cells.
Provide nutritional support for regenerating epidermis & dermis during wound healing.

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Scarring
Important for long term wound resolution & to promote restoration of strong, healthy skin.
Vitamin C – pre & post surgery

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Malondialdehyde

Malondialdehyde from rancid fats. 50%
Flax, Olive, Rapeseed, Sunflower Corn, Groundnut, Safflower oils. Most packaged, bottles and processed foods e.g. Mayonnaise, Humus, Sardines, Anchovies etc

Use organic butter but only put small amount out at a time. Keep remainder in refrigerator.

Malondialdehyde from rancid fats. 50%

Common diseases – Neurological disorders, Skin, High PgE2.

Detoxified by Sulfotransferase
Aldehyde dehydrogenase
Aldehyde oxidase
Glutathione

Antidote – Adenosylcobalamin, Glutathione, P-5-P, Folinic acid, Non rancid oils, Vitamin E, Selenium, Yarrow,

Impact on the skin

Replaces good fats with rancid fats – reduced structural integrity of skin, barrier function, dry cracked skin, redness, roughness.
Itchy. Malondialdehyde goes on to form Formic Acid (substance secreted by red ants).

Rancid Fats

- **Primarily occurs with unsaturated fats**
- **More susceptible to rancidity because of structure with many double bonds**
- **Fats turn rancid in the presence of free radicals or reactive oxygen species**

Rancid Fats

- **Air (oxygen), light & heat degrade polyunsaturated lipids forming malondialdehyde**
- **Reactive aldehyde causes toxic stress in cells and forms advanced lipoxidation end products**
- **Lead to loss of membrane integrity**

Rancid Fats

- **Malondialdehyde is used as a biomarker to assess the oxidative stress of a person**
- **To assess if their consumption of rancid oils is high**
- **Replace with good oils.**
- **Remove bad oils from the diet.**
- **Detoxifying nutrient.**

Malondialdehyde

- **Main protector against malondialdehyde is Vitamin E.**
- **Vitamin E is a natural protector of oils as an antioxidant. When the vitamin E in an oil has run out, the oil turns rancid.**
- **Internally, lacking Vitamin E may predispose us to high levels of malondialdehyde.**

Vitamin B3 Deficiency

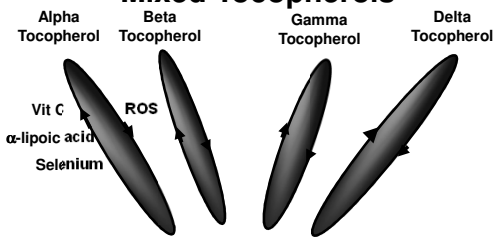
Pellagra

1. Diarrhoea
2. Dermatitis
3. Dementia

Role of Nutrition in Health and Disease by W.E. Cornatzer, Ph.D. Thomas. Page 326

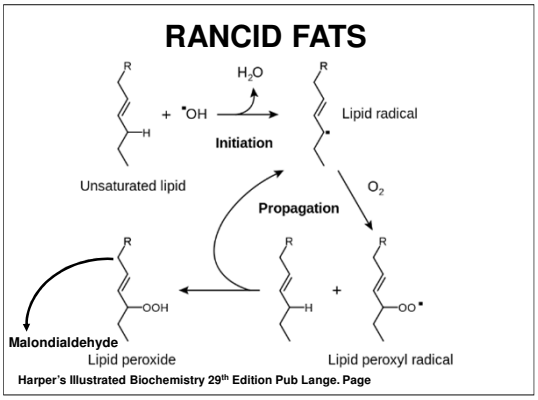
Vitamin E

Mixed Tocopherols



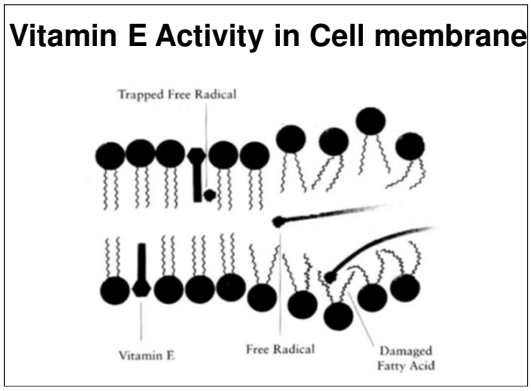
TOCOPHEROL RADICAL

RANCID FATS



Harper's Illustrated Biochemistry 29th Edition Pub Lange. Page

Vitamin E Activity in Cell membrane



Vitamin E & Skin Health

Integral part of skin's anti-oxidant defences, providing protection against UV radiation & other free radicals that come into contact with the epidermis.
Fat soluble – provided to the skin through the sebum.
Anti-inflammatory role.

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Forms of Vitamin E

2 classes of molecules with similar structures & anti-oxidant properties.
Comprising a family of 8 substances.
4 Tocopherols & 4 Tocotrienols.
Skin contains amounts of all the 8 forms.

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Vitamin E & Skin Health

Following oral ingestion it takes 7 days before content of sebum is altered.

It may help in cases of changes in skin collagen – cross linking.

Wound healing – Vitamin E levels decrease rapidly at the site of a cutaneous wound.

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- **Delegates to test for malondialdehyde**

How to determine if an oil is rancid

Rancid Fats

- **Measure the oxidative stability of an oil**
- **Rancimat method measures the progress of the oxidation reaction**
- **Measures the volatile oxidation products, largely formic acid**
- **Biomarker Formic acid to test rancid oils**

To test if an oil or food is rancid

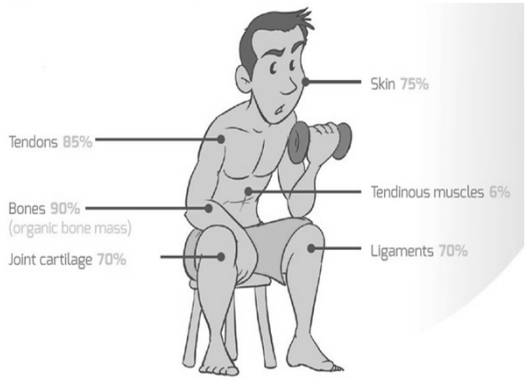
- **Test patient with Formic acid to check not weakening in the clear**
- **Test oil or food vial**
- **Test oil or food with formic acid test vial on the body**
- **If SIM weakens, oil or food is rancid and contributing to lipid peroxidation**

To test if an oil or food is rancid

- **Test some oils to demonstrate formic acid**

Collagen

Collagen is the most abundant protein in the human body and is the substance that holds the whole body together. It is found in the bones, muscles, skin and tendons, where it forms a scaffold to provide strength and structure.



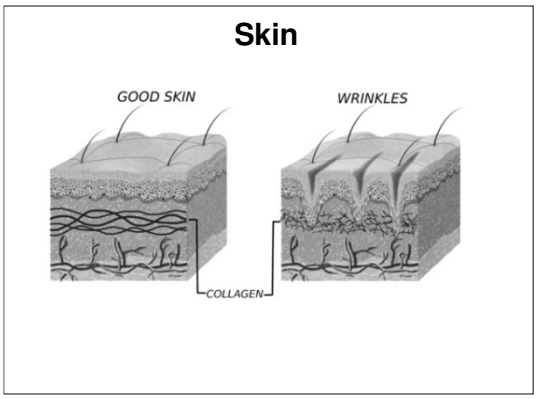
Collagen gives strength to

Skin	**Muscle**
Ligaments	**Tendons**
Bone	**Fascia**
Blood vessels	**Heart**
Lungs	**Intestines**
Bladder	**Ears**
Eyes	**Nose**

Intervertebral disc
Teeth and Gums

In the dermis - collagen helps form a fibrous network, upon which new cells can grow. Collagen is also required in the replacement of dead skin cells. .

Skin



The principal protein of bone is collagen (90%) and some non-collagen proteins which are specific to bone.

The key finding was that the firmer the face and forehead, the greater the bone density; the more wrinkles, the lower the bone density in the back and feet to be specific.

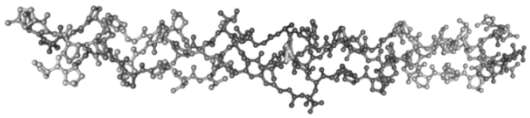
Osteoporosis – Not inherited genetically, brought on with age, associated with reduced levels of collagen in the skin and bones.

Test for low Dihydrotestosterone levels.

The Essentials of Collagen

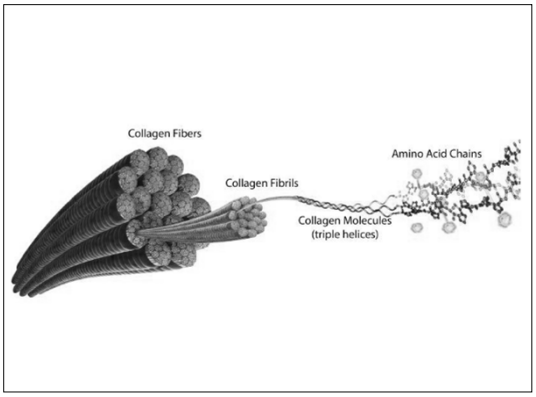
Synthesis of Collagen

HUMAN COLLAGEN MOLECULE



Each chain contains around 1,000 amino acids, and usually features an amino acid sequence consisting of Glycine, Proline (or Hydroxyproline) and Lysine (or Hydroxylysine).

Gly–X-X-Gly-X-X-Gly-X-X-Gly-X



Collagen production naturally declines with age, reducing the structural integrity of the skin and leading to sagging skin, the formation of lines and wrinkles and the weakening of cartilage in joints.

Collagen is secreted by a variety of different cells, but primarily by connective tissue cells (fibroblasts).
While young, the body consistently produces collagen, but collagen synthesis begins to decline around the age of 40, with a dramatic reduction in synthesis in women after menopause.

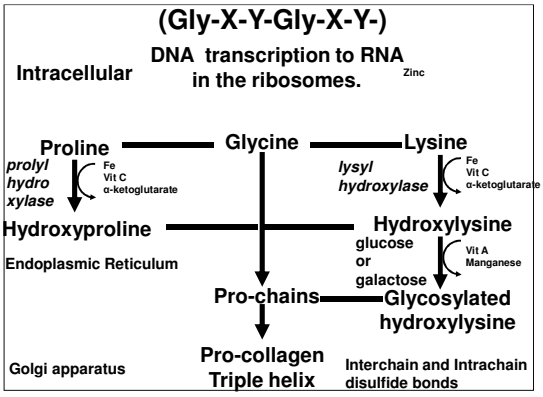
By the age of 60 there is typically a considerable decline in collagen production.
Age-related collagen changes could explain both the wrinkling and sagging of skin and a simultaneous deterioration of bone quality and quantity.

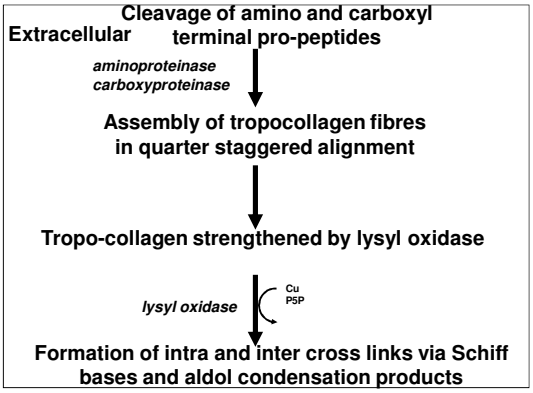
Gradual calcium deposition within collagen occurs as a natural function of aging.

Patient will weaken to calcium phosphate indicating a build up of calcium.

Test for Magnesium, EFAs, Smart Vitamin K2.

100mcg per drop





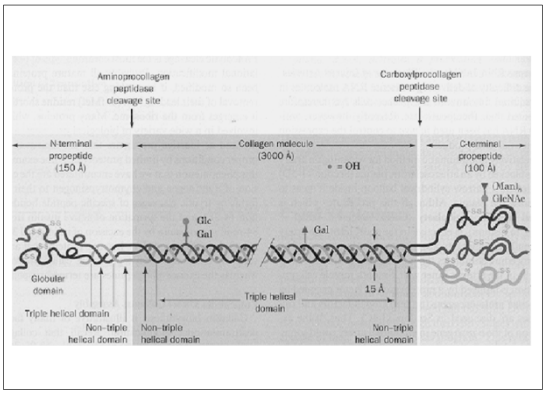
Collagen Production is as follows-

1. **DNA transcription of various RNA molecules. About 34 genes are associated with collagen formation which is Zinc dependant.**
2. **RNA instructs amino acids, mainly Glycine, Proline and Lysine to form collagen strands in the ribosomes.**

3. **These are then attached to the Endoplamsic Reticulum where they produce single prochains. Proline and Lysine are hydroxylated by prolyl hydroxylase and lysyl hydroxylase co-factored by Alpha keto glutarate, Iron and Vitamin C Tetrahydrobiopterin?**

4. These are then glycosylated with glucose or galactose (co-factored by Manganese and Vitamin A).

5.Three pro-chains combine to form pro-collagen in the Endoplasmic Reticulum. And are then transported to the Golgi Apparatus and then to the plasma membrane. The pro-collagen intra and inter-chains are held together by disulfide bonds formed from PAPs, cysteine or sulfur.



6. Pro-collagen is then released into the extra-cellular space (co-factored by Zinc and Vitamin A)

7. Registration peptides are cleaved and tropocollagen is formed by *procollagen peptidase*, and strengthened by cross-linking of the micro-fibrils by lysyl oxidase, a copper dependant enzyme which is inhibited by high levels of homocysteine (P-5-P and Vit C).

8. Thicker collagen fibres are formed by layers of microfibrils.

DNA transcription in nucleus Zn

↓

Assembly of Amino acids

↓

Formation of 3 Pro-chains and Hydroxylation of Lysine and Proline Vit C Fe H4biopterin

↓

Glycosylation by Glucose and Galactose Vit A Mn

↓

3 Pro-chains combine to form Pro-collagen

↓

Intra and Inter chains cross linked with sulfur S

Intracellular

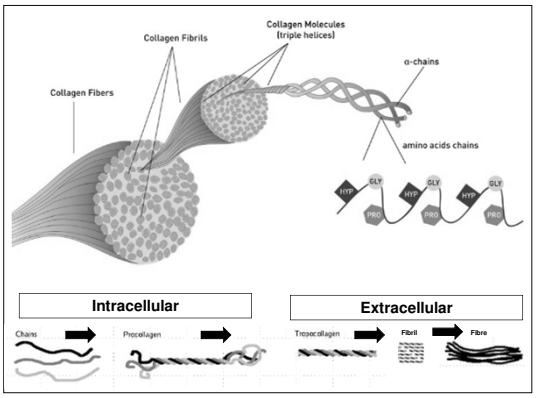
Extracellular

↓

Tropo-collagen strengthened by lysyl oxidase

↓

Thicker fibres are formed by layers of microfibrils P5P Cu



Other compounds also aid normal collagen cross linking. Such as SMART Vitamin C and the Anthocyanidins such as Bilberry.

Cortisol stimulates degradation of (skin) collagen into amino acids.

SMART C

Vitamin C
α-Lipoic acid
Reishi mushroom
Shitake mushroom
Beetroot
Rutin

Role of Silica in Collagen

- **The involvement of silica in collagen synthesis not fully established**
- **Gene transcription of type 1 collagen gene**
- **Co-factor for prolyl hydroxylase**
- **Utilisation of minerals required for bone and collagen, Cu, Cal, Mg**

Role of Silica in Collagen

- **Contributes to normal formation of collagen and connective tissue**
- **Maintenance of normal bone**
- **Maintenance of normal joints**
- **Normal appearance and elasticity of the skin**

Role of Silica in Collagen

- **Contribution to normal formation of hair and nails**
- ***Panel of Dietetic Products, Nutrition and Allergies. EFSA Journal 2011***

Collagen Formula

Vitamin C
Glycine
Lysine
Proline
Magnesium citrate
Zinc citrate
Manganese citrate
Copper citrate
NADH
5MTHF and P-5-P

Epigenetic Testways - Collagen

Positive sustained challenge –skin tug ⇨

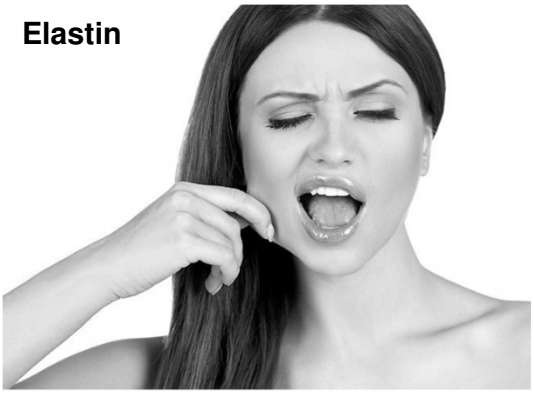
Challenge against
Zinc
Proline, Hydroxyproline
Lysine, Hydroxylysine

Glycine
Fe, Vit C, Manganese, Vit A
Sulfur, MSM , cysteine

Cu, Vit B6 (P5P)

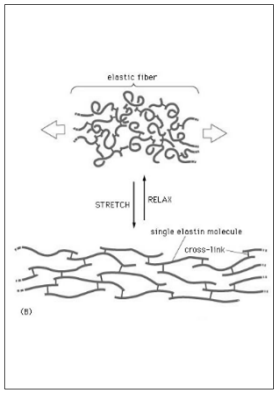
Bilberry, Si, (silicia for scarring), Vit E. Vit K2

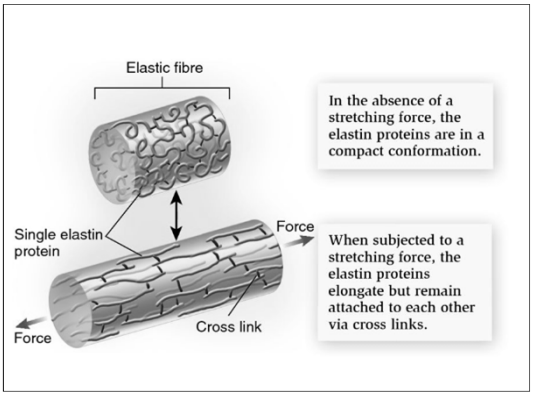
Elastin



Elastin

Fibrous protein forming elastic mesh and imparts yellow colour e.g. skin, aorta





Elastin is a connective tissue protein that possesses elastic recoil properties.

Present in ligament, lung, arteries, skin, ear cartilage, bladder

It is 1/3rd Glycine, 1/3rd Alanine + some Valine and Proline.

It contains no hydroxyproline or hydroxylysine.
The covalent cross links are formed by a lysine aldol as in collagen and requires *lysyl oxidase,* the Cu+ dependant enzyme. (Inhibited by high Homocysteine levels).

Elastic fibres (or yellow fibres) are bundles of proteins found in extracellular matrix of connective tissue and produced by fibroblasts and smooth muscle cells in arteries. These fibres can stretch up to 1.5 times their length, and snap back to their original length when relaxed.

Elastin serves an important function in arteries as a medium for pressure wave propagation to help blood flow and is particularly abundant in large elastic blood vessels such as the aorta. Elastin is also very important in the lungs, elastic ligaments, elastic cartilage, the skin, and the bladder.

Epigenetic Testways - Elastin

Positive Elastin challenge ⇒

Challenge against
- Glycine
- Alanine
- Valine
- Proline
- Copper
- Bilberry
- Progesterone
- Vitamin K2

Elastin Formula

Glycine
Alanine
Pyridoxal-5-phosphate
Bilberry
Copper

Collagen challenge

Sustain tug to skin and test strong indicator muscle

Elastin challenge

Tug skin and release and test strong indicator muscle

Epicollagen Serum

Wonder Epicollagen Serum

- **Characterised by its rapid absorption and ability to penetrate into the deeper layers of the skin**
- **Non greasy finish**
- **Intensive formula with a very high concentration of active substances**

Wonder Epicollagen Serum

- **Oils to stimulate the production of collagen and elastin**
- **Fatty acids and sterols which stimulate the receptors on fibroblasts**
- **Castor bean oil**
- **Walnut oil**

Organic Castor Bean oil

- **Contains a saturated fat – carbon 8 fatty acid which stimulates the fibroblast to produce collagen**
- **Castor bean is the natural source of castor oil**
- **The ricin is removed during the extraction process – denatures and deactivates the ricin**

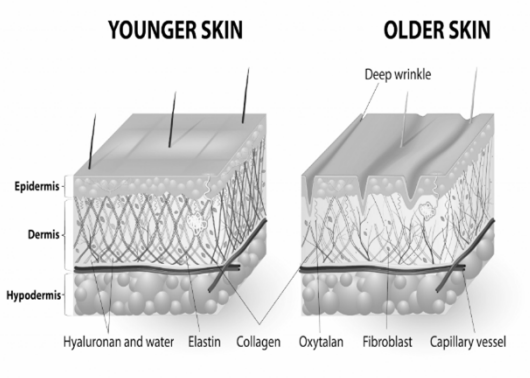
Organic Walnut oil

- **Composed largely of polyunsaturated fatty acids, 72% of the total fats**
- **Alpha linolenic 14%**
- **Linoleic acid 58%**
- **Oleic acid 13%**

Organic Walnut oil

- **"Dry" oil so will blend well with castor bean oil**
- **Excellent for mature skin**
- **Good for regeneration of the skin so perfect for anti-wrinkle blends**

Active Ingredients



Unique Marine Algae Extract

- **From the Atlantic sea water, this marine algae extract is a powerful antioxidant for skincare, shown to have extraordinary anti-aging results**
- **Based on a combination of different microalgae species**

Unique Marine Algae Extract

- **Dunaliella salina**
- **Isochrysis galbana**
- **Nannochloropsis gaditana**
- **Phaedactylum tricornutum**
- **Tetraselmis chuii**

The benefits of the ocean on skin

- **These organisms have adapted to extremely harsh and competitive environments by producing an array of compounds for chemical defence & are therefore able to live in a variety of environments.**

The benefits of the ocean on skin

- **Microalgae have developed survival strategies based on the synthesis of antioxidant and high protection compounds that represent a natural barrier against external agents.**

The benefits of the ocean on skin

- **This extract takes full advantage of the same bioactive compounds that these organisms use**
- **Captures the active ingredients of the ocean for anti aging cosmetics to protect and maintain a healthy skin, boosting repair, regeneration and hydration.**

The benefits of the ocean on skin

- **Molecule with the highest antioxidant activity, SOD (superoxide dismutase)**

Algae Extract Bioactive Capacities

- **Anti-wrinkle**
- **Anti-oxidant enhancer**
- **Hydration**
- **Cell proliferation & angiogenesis**
- **Modulator of apoptosis pathway**
- **Improvement of age spots and pigmentation**

Algae Extract Bioactive Capacities

- R & D team working in molecular studies searching for the genes involved in both intrinsic and extrinsic aging
- Cell hydration
- Cell regeneration
- Collagen synthesis promoters
- Elastin synthesis

Upregulation of gene expression

- Laboratory has researched the effect on more than 500 genes to test whether these genes are stimulated by the marine extract
- Anti inflammatory, collagen promoters, moisturising, cell division and cell regeneration

Upregulation of gene expression

- The purpose of their work was to determine the expression of targeted genes in fibroblast cells treated with the marine algae extract
- Marine algae was found to stimulate genes in the fibroblasts.

Genes stimulated by Algae

SOD1	Anti-inflammatory, photoprotection, anti oxidant
FOXP3	Reduces ROS in skin
Elastase	Prevent damage to Elastin
FNB1	Stimulates fibrillin in extracellular matrix
CRABP2	increases retinoid-like activity
HGF	stimulates cell growth in fibroblasts

Powerful skincare ingredient

- Collagen promoter
- Skin brightener
- Stimulates mitochondrial activity
- High anti-oxidant capacity
- High content of natural moisturising factors
- Helps to repair skin

Powerful skincare ingredient

- Contributes to the restoring of the natural barrier against external factors
- Anti-oxidant, anti-wrinkle and regeneration capacity
- All these properties help to fight premature skin aging

Vitamin C

- **A vital component of collagen**
- **Powerful anti-oxidant**
- **Stable form of Vitamin C which overcomes the oxidation problems with Vitamin C**
- **Sodium Ascorbyl Phosphate**

Wonder Epicollagen Serum

- **Organic Essential oils to stimulate the production of collagen:**
  - **Frankincense**
  - **Tangerine**
  - **Geranium**
  - **Lavender**
  - **Ylang Ylang**

Wonder Epicollagen Serum

- **Epi meaning above**
- **Providing the signals to stimulate the production of collagen – castor oil, walnut oil, algae – upregulate important gene expression for skin**
- **Providing the major nutrient to produce collagen – vitamin C**
- **No "nasties" to disrupt function**

Test for the Epicollagen Cream

- **Tug and twang test for collagen and elastin**
- **Stretch a wrinkle**

Linking the emotions with the Biochemistry

Patient Protocol

Major cause of ill health is Emotional

Procedure to start with emotions
Determine the meridian for the subconscious mind

Why is the Subconscious mind so important?

Database of everything that has ever happened to us.
Everything we have ever seen, heard, touched, smelt, tasted.

The subconscious does not think at all. It is like a tape player. It plays forever until the program is rewritten.
The subconscious mind is 95% of the operation of the brain and is a million times more powerful than the conscious mind. Conscious mind was an add on in evolution through the frontal cortex.

Programs in the subconscious mind will overpower programs in the conscious mind.
Subconscious mind can manage 40 million bits of information per second whereas the conscious mind can only manage 40 bits of information.
The two minds work in tandem.

If the conscious mind is occupied say by a conversation the subconscious mind runs the body and behaviours so we become oblivious to the actions of the subconscious mind. We do not see that some of these programs are sabotaging ourselves.

Subconscious mind develops patterns and programs from our parents, teachers, siblings, friends etc. Like mother like daughter etc. Nurture v Nature.

Subconscious programs start being laid down in utero. The fetus responds to the environment of the mother. The mother's blood carries all the chemicals that relate to her emotions which cross the placental barrier.

The father has an influence also. Fetus can hear the father's voice and recognise it after birth. Imagine the chemistry in an unwanted child. If mother stressed, fetus will develop stress with bigger limbs and hind brain but smaller viscera and forebrain.

So as children we can download good perceptions and misperceptions like fears, phobias, low self esteem, anger etc. the younger the child the more vulnerable to programming misperceptions as they are in a hypnotic like state due to the lower brain waves.

Childhood brain development
Adult has complete range of brain electric wave activity (EEG).
0-2 yr Delta wave pattern 1-4Hz
unconscious hypnotic state
2-7 yr Theta wave pattern 4-8 Hz
early sleep / hypnosis
7-12 yr Alpha wave pattern 8-12Hz
relaxation
12 – Beta wave pattern 12 Hz ↑

95+% of our life we operate from the subconscious mind.
75% of Conscious thinking is negative.

- **Molecules of emotion discovered by Candice Pert**
- **"Body is our Subconscious Mind" Candice Pert**

Molecules of Emotion

- **Pert identified a link between the physical cell structure and emotional experiences**
- **Receptor molecules on cells recognise and attract specific stimuli generated by a state of mind**

Molecules of Emotion

- **These stimuli are neuropeptides which give instructions to cells**
- **Essentially every cell has receptor sites for the peptides that carry emotion**
- **Neuropeptides stimulated by thoughts that lock on to the receptors in the cells**

Molecules of Emotion

- **This then changes the activity of the cell leading to physical symptoms**

Molecules of Emotion

- **As a cell's receptor site is activated an electrical charge is passed inside the cell, initiating a biochemical response**

Molecules of Emotion

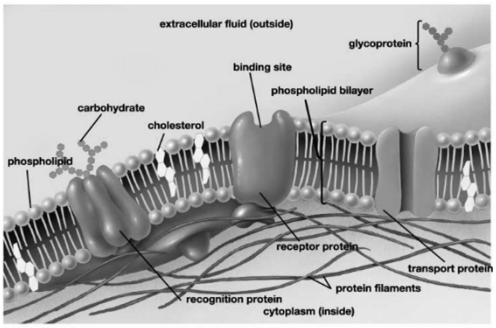
- **These building blocks are neuropeptides which are strings of amino acids**

Body is our subconscious mind

- **Brain is densely populated with receptors for neuropeptides**
- **Same receptors are duplicated elsewhere in the body**
- **Found in every part of the body – brain, blood, organs, bone, muscles**

Body is our subconscious mind

- **Mind is no longer to be viewed as a function of the brain, change of flow of information throughout the body**
- **The neuropeptides put the entire body into an altered state of consciousness**
- **Entire physiology is regulated by these informational molecules**



Subconscious thoughts

↓

Stimulate cell receptors

↓

Change cell activity

↓

Influence neurotransmitters
Influence hormone

↓

Result in physical symptoms

Summary

- We want to treat the patient's subconscious mind and the physical manifestation of that in the body
- We need to determine which meridian is affected by the subconscious mind

Relationship between the meridians and emotions

Meridian/emotion relationship Based on David Hawkins work on levels of consciousness.

Meridians and Emotions
BI = Shame and Humiliation
GB = Guilt and Blame
LI = Apathy and Despair
CV = Grief and Regret
Kid = Fear and Anxiety
GV = Craving and Desire
Lung = Anger and Hate
Liv = Pride and Scorn
TW = Neutrality and Trust
Cx = Courage and Affirmation
St = Acceptance and Forgiveness
Sp = Willingness and Optimism
SI = Reason and Understanding
Ht = Love and Reverence

Meridians and Positive Emotions
BI = Gentleness with self, feeling self esteem
GB = Kindness towards self & others
LI = Motivation, hope
CV = Inspired (breath in) letting go (breath out)
Kid = Calm, feeling in control, peace
GV = Sense of strength, contentment
Lung = Tolerance and kindness, assertiveness
Liv = Feeling centred and secure, standing tall
TW = Neutrality and Trust
Cx = Courage and Affirmation
St = Acceptance and Forgiveness
Sp = Willingness and Optimism
SI = Reason and Understanding, have faith
Ht = Love and reverence of self and others

Subconscious meridian Therapy localise to the greater wing of the right and then left sphenoid. Then reverse therapy localisation.

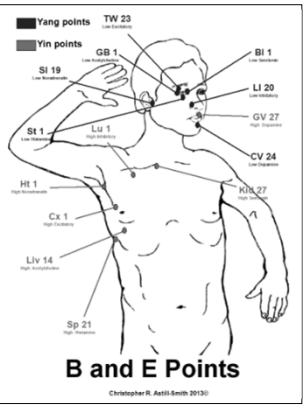
Maintain positive therapy localisation and challenge for meridian that negates using Biophoton meridian coloured acetates (or B&E points).

Check muscles for weakness on this meridian in the clear. You can use these muscles to find what nutrients strengthen,

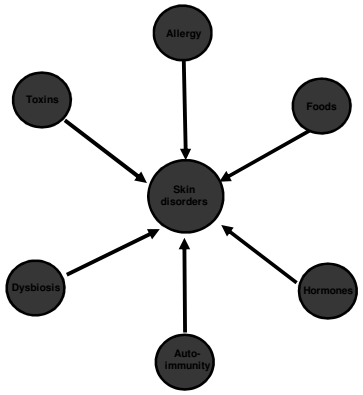
Testing Procedure

1. **TL Greater Wings of the Sphenoid. First Right to Left, if not weak then Left to Right.**
2. **Test with the meridian acetates to find the strengthening one.**
3. **Test the muscles on that meridian.**

The points on the face indicate the Yang meridians. Those on the body indicate the Yin meridians



Reveals issues at a deeper level.
During testing keep the subconscious meridian acetate on the forehead. (TL the B&E point of the emotional meridian).



Dysbiosis Testing

- **Check individual digestive enzymes**
- **Parasites and fungal overgrowth**
- **Re-balance gut flora**
- **5 R Program – Remove, Replace, Re-inoculate, repair, Regenerate**

Treatment – The 5 R program
1. Remove- Pathogens, Allergens
2. Replace – Digestive enzymes
3. Re inoculate- Probiotics
4. Repair- Glutamine, Zn
5. Regenerate – Folates,
Vitamin A
EFAs/oils
Vitamin E

Jeffrey Bland PhD

Infections Parasites
Protease DR
Iodine
Artemesia Annua
Black walnut tincture and caps
Wormwood
Wormwood combination
AP Formula
Saccharides
Probiotics

Infections Fungi
Amylase DR
Zinc SA
Oregano
Probiotics
Coconut oil
Pau D'arco tincture or caps
AF Cream locally
Always check for EFAs

Infections GUT –Lipopolysaccharides
Digestive enzymes

Prebiotics - Inulin
Probiotics
Fibre – Psyllium
Chlorella
Water
Check for Folates, Zinc, Glutamine.

Naturally occurring chemicals in foods and drinks f

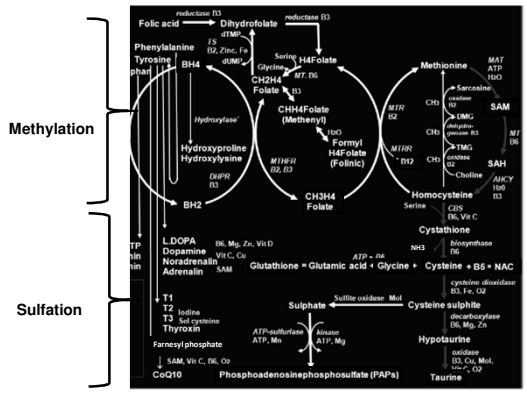
Common food and drink chemicals

Alpha Solanene	Oxalates
Betaine	Salicylates
Caffeine	Sulfites
Cysteine	Thiobromine
Glutamate	Tomato toxin
Histamine	Tyramine
Isothiocyanate	Uric acid
Malondialdehyde	

Isothiocyanates

<u>Isothiocyanate foods 20%</u>
Brussels sprouts, Broccoli, Cabbage, Cauliflower
Kale, Spinach, Pak choi
Watercress, Garden cress, Mustard, Turnip, Kohlrabi, Horseradish, Radishes, Capers
Globe artichoke, Celery

Possibly Egg, Oats, Bulgur wheat in some cases.



α-Solanine

<u>α-Solanine foods15%</u>
Potatoes especially if green (also chaconine)
Tomatoes
Green peppers (also <u>capsaicin</u>)
Aubergines (egg plants)
Tobacco
Paprika
Goji berries
Ashwagandha

The following foods contain solanine, but are not a part of the nightshade family, including:
Blueberries / Bilberries
Apples
Cherries
Sugar beets
Okra
Artichokes
Ascorbyl Palmitate (it's potatoes)
Yeast (Most yeast contains potato)

Tyramine

Tyramine foods10%

Cheese – aged cheese: blue, brick, brie, cheddar, swiss, roquefort, mozzarella, provolone, emmental, colby, american, parmesan
Fruits – Over ripe bananas and avocados, figs, grapes, oranges, pineapples, raspberries, plums, prunes, raisins, overripe fruit and dried fruit
Meat & Fish – aged, dried, fermented, salted, smoked or pickled – pepperoni, salami, liverwurst, bologna, bacon, frankfurters, ham.
Vegetables – snow peas, fava or broad beans, sauerkraut, pickles, olives, avocados, eggplant, tomatoes
Soy – fermented: miso, soy sauce, teriyaki sauce, tofu, tempeh
Nuts and Seeds – all nuts
Beverages – all alcoholic beverages, all non-alcoholic fermented beverages
Other – yeast, brewers extracts, chocolate, caffeine, coke

Tyramine foods10%

Antidote – Rosemary, Yarrow, Vitamin C

Purines forming Uric acid

Purine high foods > High Uric acid

Red meats which come from cows or sheep and include steak, chops, corned beef and larger pieces of meat usually roasted in the oven. Game. Meat extracts (e.g Oxo, Bovril). Gravy.
Brains, kidneys, liver & heart (offal), sweetbreads (thymus and panceas).
Shellfish such as , mussels, oysters and sea eggs.
Anchovies, herrings, mackerel, sardines.
Peas and beans, carrot.
Alcohol. especially beer and wine.

Phenolic foods

Phenols Foods

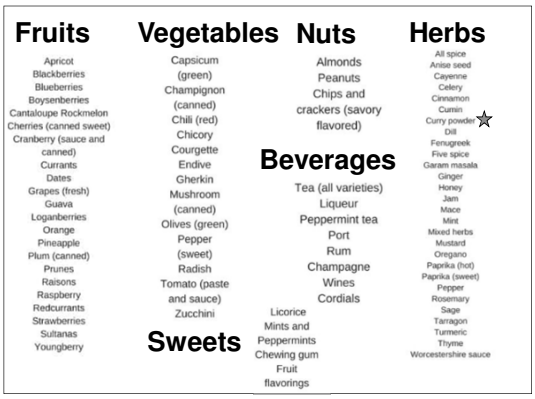
Phenols are present naturally in certain foods and are also found in food additives or preservatives in processed foods and food packaging. The types of phenols known to cause symptoms are:

Salicylates
Amines (e.g. Histamine)
Glutamates

Salicylates

Salicylate foods

Cold & flu remedies
Medicines used for pain for headache, periods, sinus
Some antacids
Drugs used for inflammatory bowel disease
Many complementary and alternative medicines, especially those used for Pain and joint problems
Teething gels.
Foods containing high levels of salicylate include tea (except fruit and camomile tea), coffee, almonds, dried herbs and spices, cloves, black pepper, paprika, sharp green apples, apricots, bananas, cherries, strawberries, dried fruit, peaches, plums, prunes, tomatoes (fresh, puree and ketchup), cucumber, pickles, fruit juices, grapes, nectarines, oranges, cider, cider vinegar, wine, wine vinegar, peppermints and liquorice. Oil of wintergreen, rosehips, acerola, food colourings and preservers, broccoli. Smoked foods.



<u>Salicylate foods</u>

<u>Common diseases</u> – Epilepsy, eczema, Asthma.
<u>Detoxified</u> by Glutathione, Sulfation

<u>Antidote</u> - NAC, Taurine, CoQ10 Glutathione

Histamine

Histamine foods

Bananas, Prickly pear, Stinging nettle, Cabbage, Milk thistle, Shepherds purse, Celendine, Melon, Sunflower, Strawberries, Sauerkraut, Salami, Bacon, Bass, Beer, Chicken, Cocoa, Chocolate, Cod, Crab, Haddock, Ham, Lobster, Mackerel, Milk (cow and goat), Mutton, Oyster, Salmon, Scallop, Shrimp, Trout, Tuna, Turkey, Yeast, Yoghurt, Avocados.

Glutamate

Glutamate Foods

Celery, Foods matured, cured or preserved – eg mature cheeses, Parmesan, cured meats
Fish sauce
Soy sauce and soy protein
Mushrooms
Ripe tomatoes
Broccoli
Peas
Walnuts
Grape juice
Bone broths
Meats cooked for a long time – eg braising, stews
Malted barley in breads and beer
Wheat gluten, Dairy casein

Glutamate Foods

Common diseases – Hyperactivity, Hypertonicity in muscles

Antidote- NAC, Yarrow (for Glutathione)

Monosodium glutamate (MSG) 3 pages

Celery, Autolyzed yeast - which contains free glutamate
Other menu items that contain soy sauce, natural flavours, autolyzed yeast or hydrolyzed protein which can contain up to 20% free glutamic acid - the active part of MSG.
Hamburger Helper Microwave Singles® (targeted towards children)
Doritos®
Campbell's® soups - all of them - based on their commitment to add "umami" (read - MSG)
Pringles® (the flavoured varieties)
Lipton® Noodles and Sauce
Lipton® Instant soup mix
Unilever or Knorr® products - often used in homemade Veggie dips.
Kraft® products nearly all contain some free glutamate
Cup-a-soup® or Cup-o-Noodles®
Planters® salted nuts - most of them
Accent® -this is nearly pure MSG
Braggs® Liquid Aminos -
Tangle extract (seaweed extract) - found in sushi rolls
Fish extract (sauce) - made from decomposed fish protein - used now in Japanese sushi dishes.

Monosodium glutamate cont
Sausages - most supermarkets add MSG to theirs
Processed cheese spread
Marmite®
Supermarket poultry or turkeys that are injected or "self-basting"
Restaurant gravy from food service cans
Boullion - any kind
Instant soup mixes
Many salad dressings
Most salty, powdered dry food mixes - read labels
Flavoured potato crisps
Monopotassium glutamate
Glutamic acid
Gelatin
Hydrolyzed vegetable protein, like canned tuna and even hot dogs)
Hydrolyzed plant protein, like canned tuna and even hot dogs)
Sodium caseinate
Textured protein
Beet juice - it is used as a colouring, but MSG is manufactured from beets and the extract may contain free glutamic acid - Yo Baby - organic baby yogurt has just changed the formula to include beet extract
Yeast extract

Monosodium glutamate cont
Yeast food or nutrient
Soy protein isolate
Soy sauce
Worcestershire sauce
Kombu extract
Dry milk and whey powder
"Natural flavours" - may contain up to 20% MSG
Carageen
Dough conditioners
Malted barley
Malted barley flour - found in many supermarket breads and all-purpose flours
Body builder drink powders containing protein
Parmesan cheese - naturally high in free glutamate
Over-ripe tomatoes - naturally high in free glutamate
Mushrooms - naturally high in free glutamate
Medications in gelcaps - contain free glutamic acid in the gelatin
Cosmetics and shampoos - some now contain glutamic acid
Fresh produce sprayed with Auxigro in the field.
May also be in Apple juice, Cranberry juice, Alcoholic drinks, Dark chocolate or cocoa, Multi vitamins, Hydrogeneated fats
Antidote – Glutathione, NAC

Oxalates

Oxalates

Very high -
Avocados, Dates, Grapefruit, Kiwi, Oranges, Raspberries, Canned and dried pineapple, Dried figs, Bamboo shoots, Beets, Fava beans, Okra, Olives, Parsnip, Kidney beans, Rhubarb, Spinach, Tomato sauce, Raw carrots, Soy beans, Brussel sprouts, Potatoes, Brown rice,
Couscous, Tahini, Pasta, Veggie burgers, All nuts, Carrot juice, Hot chocolate, Lemonade, Rice milk, Soy milk, Tea, Clam chowder, Miso soup, Lentil soup. CABBAGE.
High – Tangerines, Figs, Dried prunes, Celery, Collards, Whole wheat, White rice.

Oxalates

Common diseases – Kidney stones (Calcium oxalate), Interstitial cystitis
Detoxified by Sulfotransferase
Antidote – Folinic acid, P-5-P, EFAs.
Magnesium*
Probiotics*

Lieske, J. C.; Goldfarb, D. S.; De Simone, C.; Regnier, C. (2005). "Use of a probiotic to decrease enteric hyperoxaluria". *Kidney International.* 68 (3): 1244–9.

Caffeine

Caffeine

Coffee (also avoid decaf – is only 97% caffeine free) and Tea
Soda, energy drinks other beverages
Chocolate (also contains theobromine)
Hot Chocolate, mocha- and coffee-flavoured ice cream and frozen yogurt.
Caffeine-Fortified Foods such as sunflower seeds, nuts, frozen waffles, snack chips, beef jerky -- even marshmallows, jelly beans and gummy bears.
Protein bars and candy bars
Fancy flavoured water
Alcohol flavoured energy drinks
Weight loss pills, Pain relievers
Breath fresheners, Caffeinated mints
Some instant oatmeal
Antidote -Thyme

Caffeine

Common diseases – Hypertension
Detoxified by Methylation
Antidote -Thyme

Betaine

Betaine
in descending order
Wheat Bran
Quinoa
Beets (root and sugar)
Spinach
Amaranth Grain
Rye Grain
Kamut Wheat Grain
Bulgar Wheat Grain
Sweet Potato
Turkey Breast
Veal
Beef
Onions
Mushrooms
Shrimp
Scallops,
Broccoli
Chicken
Eggs
Pork
Soya
Pork
Oats
Brown rice
Wine
Beer
Green tea.

Cysteine

Cysteine foods
Animal: meat (including pork and poultry), eggs, dairy;
Plant: Red peppers
Garlic, Onions (Onions also produce sulfenic acids), Broccoli, Brussels sprout, Oats, Sweet potato
Wheat germ, Sprouted lentils, Spinach

Sulfites

Sulphites

Wine, beer, cocktail mixes, soft drinks, instant tea
Cookies, crackers, dried fruit or vegetables
Dried citrus fruit beverage bases
Horseradish, pickled onions, pickles, olives, wine vinegar
White sugar from sugar beet
Anti-emetics, CVS drugs, antibiotics, tranquilizers, muscle relaxants, analgesics, steroids, bronchial dilators.
Canned clams; fresh, frozen, canned or dried shrimp; frozen lobster; scallops; dried cod.
Fruit fillings, flavoured and unflavoured gelatine, pectin jelling agents.
Cornstarch, modified food starch, spinach pasta, gravies, breadings, batters, noodle/rice mixes.
Jams, jellies, shredded coconut
Canned, bottled or frozen fruit juices (including lemon, lime, grape and apple); dried fruit; canned, bottled or frozen dietetic fruit or fruit juices; maraschino cherries and glazed fruit.
Vegetable juice, canned vegetables (including potatoes), pickled vegetables (including sauerkraut), dried vegetables, instant mashed potatoes, frozen potatoes and potato salad.

Atropine
(Tomato / Potato Toxin)

Atropine is present in
Tomato
Potato
Aubergine
Bell peppers
Chilli
Egg Tobacco
Datura, Herbane
Mandrake root

Demonstrate the 15 food groups
New hypertonicity test

Hypertonicity

Preliminary Test
Strong Indicator Muscle

Before proceeding check indicator muscle for hypertonicity by testing with the corresponding meridian acetate on.
If the muscle weakens then it is hypertonic and do not use as an indicator.
e.g. Quadriceps and Small Intestine acetate.

Muscles and their meridian relationship.

Meridian	Muscles
Bladder	Tibialis ant, Tibialis post, Peroneus long/ brevis, Peroneus tertius
Kidney	Psoas, Iliacus, Upper trap
Gall bladder	Popliteus
Liver	PMS, Rhomoids
Large Intestine	TFL, Hamstrings, QL
Lung	Deltoid, Serratus ant, Coracobrachialis
CV	Supraspinatus, Diaphragm
GV	Teres major
Triple warmer	Teres minor, Infraspinatus
Circulation / sex	Glut max, Glut med/min, Piriformis, Adductors, Sartorius, Gracilis
Stomach	PMC, Neck flexors, Biceps, Brachialis, Pronator teres, Pronator quadratus
Spleen	Lat dorsi, Mid trap, Lower trap, Triceps
Small intestine	Quads, Abdominals
Heart	Subscapularis

Taken from Applied Kinesiology Synopsis 2nd Edition by David Walther DC

A hypertonic muscle is one that fails to become inhibited when it should e.g.

1. **Running the meridian end to beginning point**
2. **Approximating the muscle spindle cells**
3. **Tapping the muscle / Meridian's sedation point**
4. **North / South pole of a magnet**

Dr Sheldon Deal -Shortcuts

How do we solve this?

1. **Remove the foods**
2. **Provide the detoxifying activated vitamin**

Implication for detoxing internally produced substances as well.
The food group is an indication that they are not detoxifying well. Certain detoxifying pathways are not fully functioning.

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Implication for detoxing internally produced substances as well.
If not detoxifying external toxins then you have a much bigger problem detoxifying internally generated substances. Internal exhaust system.

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Single Nucleotide Polymorphisms (SNIP's) Activated Vitamins

Activated Vitamins / co-enzymes

Needed for enzymes to function.

They are activated Vitamin Bs plus:

Vitamin C, Alpha lipoic acid, CoQ10 and SAM.

When we ingest vitamins they are activated by the body and it is these activated forms that carry out the biological functions in the body.

Some people have a defect in converting the raw vitamin to the activated form which leads to health problems.

This is generally a genetic defect which has either been inherited or acquired during their lifetime from toxins or infections.

We can greatly improve the health of our patients if we are able to identify this defect or SNIP as it is called.

Clinical experience using the naturally occurring food chemicals.

This generally indicates that the patient is not producing enough of an activated vitamin and this impairs their ability to detoxify the natural chemicals.

These co-enzymes are used in the liver detoxification pathways.

There will be other areas in the body that will benefit from taking the activated vitamin, not just detoxification – eg hormone and neurotransmitter production.

Genes are made of DNA strands. When there is a defect in the DNA strand then the gene does not function properly and does not produce the correct enzymes eg the enzyme which makes P5P so we need to supplement P5P.

As many as one third of mutations in a gene result in the an enzyme having an increased requirement for a coenzyme. The lack of this co-enzyme results in a lower rate of functioning of the gene.

About 50 human genetic diseases due to defective enzymes can be remedied or ameliorated by the administration of high doses of the corresponding vitamin coenzyme, which at least partially restores enzymatic activity.

Nucleotide Bases make DNA

1. **Adenine (A)**
2. **Cytosine (C)**
3. **Guanine (G)**
4. **Thymine (T)**
5. **Uracil (U)**

There are normal variations of DNA sequences known as polymorphisms.

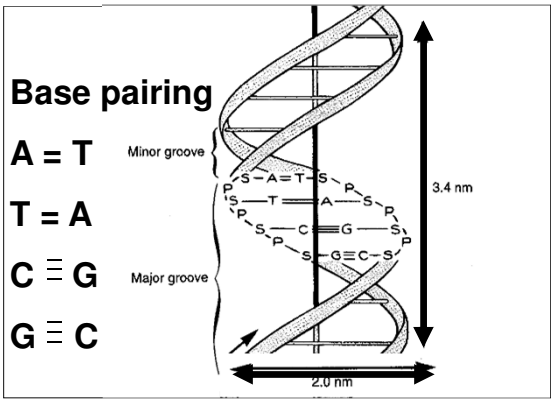
Base pairing

A = T

T = A

C ≡ G

G ≡ C



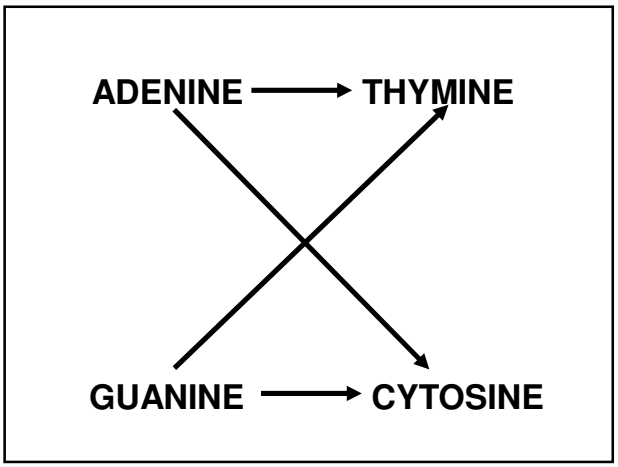
Single base point mutations (SNIPs) occur when these pairings become incorrect

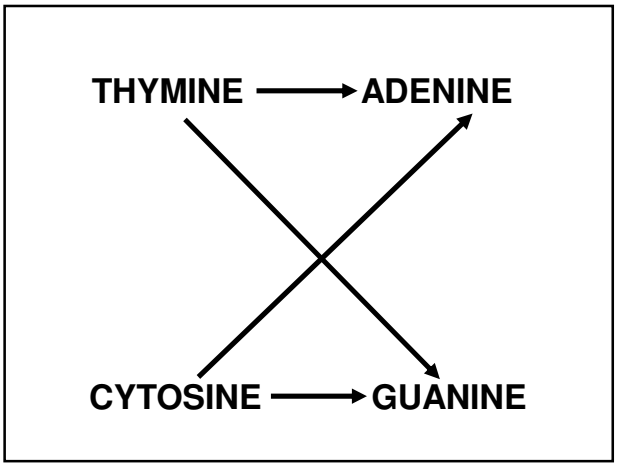
ADENINE ⟷ GUANINE

CYTOSINE ⟷ THYMINE

or where Uracil (from RNA) is incorporated into the Thymine position in DNA.

URACIL ⟶ THYMINE





SNIP Challenge

Set of test vials – A,C,G,T,U

1. **Challenge each vial of nucleotide bases from strength to weakening over lower abdomen.**
2. **Note which one weakens.**

3. Challenge weakening nucleotide base against each of the other nucleotide bases to identify which negates.
e.g. G>T

This will indicate the specific single nucleotide polymorphism (SNIP).

There is always an associated co-enzyme with each SNIP.

This indicates that a greater than normal amount of the coenzyme is required to bring an enzyme up to a more correct rate of reaction.

Each SNIP defect is caused by

1. **Inherited polymorphism (Miasm)**
2. **Acquired – Due to Zinc deficiency leading to reduced DNA / RNA polymerase function for the repair caused by ROS as a result of exposure to pathogens especially viruses, toxic metals, mycotoxins, chemicals and / or ionising radiation.**

IFROM STRENGTH	FROM WEAKNESS	COENZYME		
A>C	C>A	Methylcobalamin		
A>G	G>A	Thiamine pyro		
A>T	T>A	SAM		
A>U	U>A	FAD(H)		
C>A	A>C	Adenosylcobalamin		
C>G	G>C	Thiamine triphos		
C>T	T>C	CH3H4Folate (Methyl)		
C>U	U>C	Vit C		
G>A	A>G	NAD(H)		
G>C	C>G	Carboxybiotin		
G>T	T>G	P5P		
G>U	U>G	H4Biopterin		
T>A	A>T	NADP(H)		
T>C	C>T	FMN(H)		
T>G	G>T	Lipoamide		
T>U	U>T	CoQ10		
U>A	A>U	CH H4Folate (Methenyl or Folinic acid)		
U>C	C>U	H4 Folate (Folic acid + NADH)		
U>G	G>U	CoA		
U>T	T>U	CH2 H4 Folate (Methylene)	A>A =Vit D	C>C= Vit A G>G= Vit A T>T= Vit D U>U= Vit K

Examples

- **P-5-P**
- **Adenosylcobalamin**
- **Methylcobalamin**
- **Vitamin C**
- **CoQ10**
- **a-Lipoic acid**

Demonstration
Subconscious meridian – strong
Test naturally occurring food chemicals. Find weak one.
Remove food from diet for a while – quantity issue.
Take food vial off.
Test nucleotide bases to find the co-enzyme from strength.

Eczema

Eczema
Eczema is an inflammation of the skin, usually causing itching and sometimes accompanied by scaling or blisters.

Atopic dermatitis is a type of eczema made worse by allergen exposure.

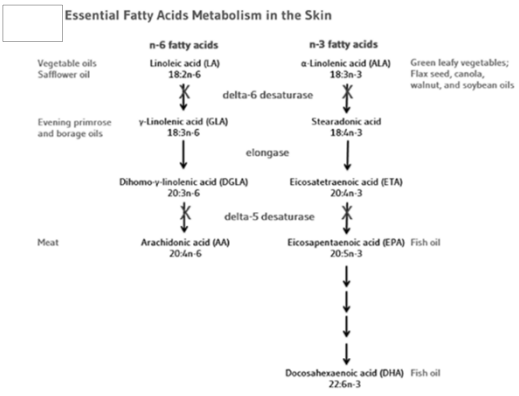
Clinical experience Eczema
Very common in children, babies
Main cause is formic acid, leading to itching
Bad fats – also in mothers
Definite cause – endogenous
Irritant coming from inside, not being metabolised
Tyramine

Clinical experience Eczema
Oxidation of tyrosine in foods
Undigested proteins that contain tyrosine get oxidised in the gut leading to tyramine
Endogenous produced tyramine is the main cause.

Baby Oscar
Patient

Baby Oscar
After treatment

Baby Oscar treatment
Not anything he was eating – nor mother.
Deficiency of fatty acids. The converted form DHA. This needs to be made in the body by enzymes – genetic issue?



Baby Oscar treatment
Checked what toiletries putting on the skin.
Paraffinum – mineral oil, petroleum by product.
Petrolatum, benzyl…..benzene
Interfere with bodies own natural moisturising mechanism, leading to dryness.

www.realfoods.co.uk/article/the-top-5-nasties-to-avoid-in-toiletries

Baby Oscar treatment
Parabens – can cause skin irritation, contact dermatitis & rosacea.
Studies have shown that estrogenic & are absorbed through skin.
Patient – eczema since childhood, breast cancer.

www.realfoods.co.uk/article/the-top-5-nasties-to-avoid-in-toiletries

Baby Oscar treatment
Changed what he put on his skin and in bath.

****** Borage Oil ******

Mineral Oil.

Petroleum by-product which coats the skin like plastic and clogs pores, promotes acne and stops skins ability to eliminate toxins. BABY OIL is mineral oil.

Used because it is so cheap.

Rancid natural emollients. Often vegetable oils found on supermarket shelves that would be out of date, rancid or heated are used in cosmetic preparations.

Form free radicals which damage and age skin.

ALLERGY

How do we test for allergy? A true allergic reaction is to a protein, in organic matter like food. The body produces immunoglobulins for the allergen or food. The body mistakenly recognises the particular protein as a foreign body, virus or bacteria.

A positive challenge to the immunoglobulin markers:

IgA - parasites
IgE – short term half life – 2-3 days - allergen
IgG – longer response half life – 18-21 days – allergen
IgM – similar to IgG
(Strength to weakening)

Common Recognised Allergens

Gluten –	**Wheat, Rye, Barley, Oats**
Cow's milk-	**Casein**
	Lactose
Cheese	**Especially mature**
	Cooked
Egg-	**White**
	Yolk
Fish	

Common Recognised Allergens

Tree nuts -	**Brazil, Hazelnuts, Almonds, Walnuts**
Ground nuts -	**Peanuts**
Shell fish	
Soya products	
Citrus fruits	
Chocolate	
Tea	
Coffee	

Common Recognised Allergens
Maize (Corn)
Lupin
Yeast
Rice - arsenic
Mustard
Celery and Celeriac
Onion / Garlic

How do we test for allergy?
Other allergic reactions can be to chemicals or metals resulting in a skin reaction, rash or hives etc.

These can be tested by using the composite vials for chemicals or toxic metals.

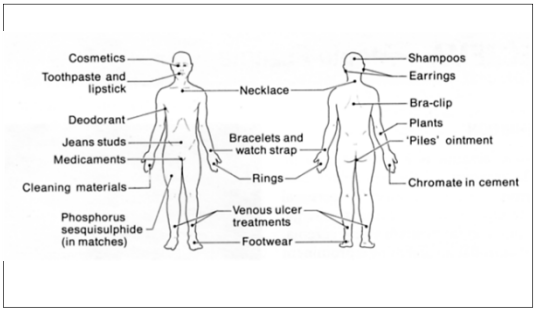
Eye Position for Intolerance or allergy
Verbal Challenges
"The allergy or intolerance that you are showing is to:
Something you are eating?
Something you are drinking?
Something you are putting on your skin/in contact with skin?
Something you are breathing in?

Sources of common allergens

Chromate	Cement,tanned leather,primer paint,anticorrosives
Cobalt	Pigment,paint,ink,metal alloys
Colophony (solder fumes)	Glue,plasticizer,adhesive tape,varnish,polish
Epoxy resins	Adhesives,plastics,mouldings
Fragrance	Cosmetics,soaps,creams,detergents
Nickel	Jewellery,zips,fasteners,scissors,instruments
Paraphenylenediamine	Dye,(clothing,hair),shoes,colour developer
Plants	Primula obconica, chrysanthemums, garlic, poisonivy
Preservatives	Cosmetics,creams and oils
Rubber Chemicals	Tyres,boots,shoes,belts,condoms,gloves

Dermatitis
Inflammation of the skin as evidenced by itchiness, redness, dryness.

Distribution clues for contact dermatitis



andout on Health: Atopic Dermatitis (A type of eczema)". *NIAMS*. May 2013. Archived from the original on 30 May 2015. Retrieved 29 July 2016.
andout on Health: Atopic Dermatitis (A type of eczema)". *NIAMS*. May 2013. Archived from the original on 30 May 2015. Retrieved 29 July 2016.

Contact Dermatitis
Allergy or chemical sensitivity
Usually a histamine reaction so need to stabilise the mast cell membranes – Zinc, magnesium, Vitamin E, bioflavonoids – Hesperidin Plus, Quercetin, Smart AH Formula capsules, Vitamin C, Smart Turmeric

Contact Dermatitis
At a particular site on the skin – in contact with the culprit, certain objects.
Eg metals, latex, household chemicals

Already high histamine – Spleen meridian.

Handout on health: Atopic Dermatitis (A type of eczema). NIAMS May 2013. Archived from the original on 30 May 2015. Retreived 29 July 2016.

Suggested irritants
Surface irritants: fibreglass, wool, nylon, rubber, washing powders, fabric conditioners, face & body creams, shampoos & conditioners, soaps, metals – nickel in bras, watch straps.

Suggested irritants
Water from water softeners – high sodium ion irritation or impurities in the salt added to soften.
Hard water, calcium dries out surface skin.
Chlorine from swimming pools.

Taurine negates the effects of chlorine.

Chlorine exposure such as being in a swimming pool for long periods, runs down P5P levels and thus people may need extra supplementation.

<u>Molloscum contagiosum</u>
Warts

Environmental Factors

Toxins – Toxic metals
Black walnut
Coriander herb Coriander spice
Lemon balm Lipoic acid
Yarrow
Vitamin C for nickel
Potassium ascorbate
NAC
CBS
Allclear

Patient – rash around the hip. Had a hip replacement and showing to toxic metals. Mercury fillings.

Toxins – Chemicals

Black walnut	
Coriander spice	**NAC**
Lemon balm	**Rosemary**
Yarrow	**Other spices**
Chlorella	**Allclear**
CBS	
Zinc	**Potassium ascorb**
Nutrient Phase 1&2	
Taurine SA	**Ornithine SA**

Toxins – Radiation

Chlorella	
Coriander spice	
Smart Vitamin C (Rutin)	
Turmeric	**Yarrow**
Allclear	**CBS**
Ornithine SA	
Taurine SA	

Hormone Linked Conditions

Acne Vulgaris

What is happening in acne?
Hair follicles clogged with dead skin cells & oils from the skin.
Leading to blackheads, whiteheads, pimples, spots, nodules, scarring.
Affects skin with high number of oil glands, face, chest, back

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

4 Abnormal processes

1. **Higher amount of oily sebum production, influenced by androgens.**
2. **Excessive deposition of the protein keratin leading to comedo formation, clogged hair follicle. Keratin plus oil. Blackhead or whitehead.**

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

4 Abnormal processes
3. Colonisation of the follicle by Proponibacterium acnes (P.acnes) bacteria
4. Local release of pro-inflammatory chemicals in the skin

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

What is happening in acne?
Increased production of oily sebum causes dead skin cells to stick together. In normal skin, cells that have died come to the surface & exit the pore of hair.
Main hormone driver of oily sebum is DHT.

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

What is happening in acne?
Another hormone responsible for increased sebaceous gland activity is DHEA.
In a sebum rich environment the naturally occurring commensal skin bacteria P.acnes grows, causing inflammation in & around hair follicle.

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

What is happening in acne?
The innate immune system sends immune cells – neutrophils, macrophages, Th1. These stimulate increased skin cell activity & overproduction leading to comedo development.

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

What is happening in acne?
If the inflammatory reaction is severe, the follicle can break into deeper layers of the dermis & subcutaneous tissue and cause formation of deep nodules, leading to tissue destruction & scar formation.

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

What is happening in acne?
Most common form of acne scars have lost collagen from the healing response.

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Hormonal Activity
Menstrual cycle problems & puberty contributes to acne.
During puberty an increase in sex hormones, androgens cause skin follicle glands to grow larger & make more oily sebum.

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Hormonal Activity
The sex hormones involved:
- **DHT**
- **DHEA**
- **and other androgens**

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Some causal factors
Side effect of testosterone replacement therapy or of anabolic steroid use.
Over the counter bodybuilding & dietary supplements are commonly found to contain anabolic steroids.

oseph, JF; Parr, MK (January 2015). "Synthetic androgens as designer supplements". *Current Neuropharmacology* (Review). **13** (1): 89–100. doi:10.2174/1570159X13666141210224756

Some causal factors
High glycemic load diets
Some evidence that milk is detrimental.
Milk contains whey proteins & hormones such as bovine IGF-1 & precursors of DHT, leading to production of androgen hormones, high sebum amounts

Bhate, K; Williams, HC (April 2014). "What's new in acne? An analysis of systematic reviews published in 2011–2012". *Clinical and Experimental Dermatology* (Review). **39** (3): 273–7

Primary Cause
Genetics is thought to be the primary cause.

According to the British Journal of Dermatology, ‘‘Epidemiology of acne vulgaris’’ 2013

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Clinical Experience with Acne
2 main minerals – Zinc & Iodine
Zinc repairing genes, skin
Iodine – balances hormones
Since imbalance of androgen hormones – androstenedione, androstenediol, testosterone, DHT, DHEA

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Clinical Experience with Acne
Sebum – oily compound.
Eating trans or rancid/oxidised fats leads to wrong composition of sebum.
Trans/rancid fats attract bacteria in the sebum.
Commensal – certain pathogens in certain circumstances can

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Clinical Experience with Acne
Turn pathogenic
Good oils have a protective effect. Like the nettle – if dry fungus attacks – need oil to protect

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Testing for Acne
Androgen hormones
From strength
DHEA
Intermediates:
- **Androstenedione**
- **Androstenediol**

Testosterone
DHT

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Most Common remedies
Zinc SA
Adrenal Support
Iodine

Bhate, K; Williams, HC (March 2013). "Epidemiology of acne vulgaris". *The British Journal of Dermatology* (Review). **168** (3): 474–85. doi:10.1111/bjd.12149. PMID 23210645

Hormonal Spots
PMS Acne

Estrogen & Progesterone
If there is a cyclical nature of spots.
Acne usually starts between 2 days & 7 days before a period begins. Usually acne ends when period starts because the production of progesterone goes down & estrogen increases

Hormonal Spots
Usually starts in teenage years when adrenal gland start making DHEA – androgen hormone.
DHEA stimulates oil glands & sebum.
Progesterone causes the increased production of sebum in facial glands.

Hormonal Spots
Testosterone causes sebum to be produced. Some women can be high in testosterone as this goes on to make the estrogens – nutritionally deficient.
When there is an increase in testosterone & decrease in estrogen the skin produces more oil.

Testing for Hormonal Spots
Steroid Hormones

From strength

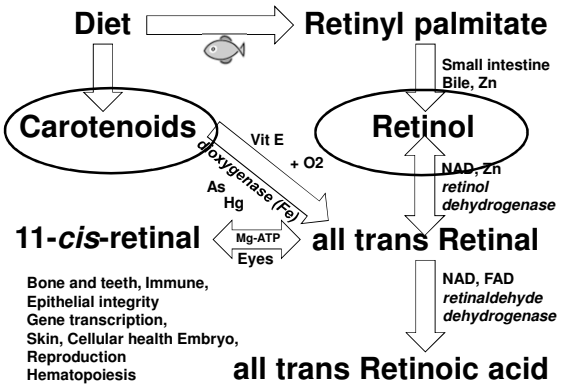
- **Progesterone**
- **DHEA**
- **Intermediates:**
  - **Androstenedione**
  - **Androstenediol**
- **Testosterone**
- **DHT**
- **Estrone**
- **Estradiol**
- **Estrone + Estradiol together**

Intermediate hormones
Androstenedione - produced in the adrenal cortex
Androstenediol – produced in the gonads

Do not have receptors so not counted as active hormones.
Can be in excess.

Demonstrate the hormone testing procedure.
From strength with the subconscious meridian on patient.

Vitamin A



<u>Vitamin A and Skin</u>

Retinoids refer to Vitamin A & various compounds derived from Vitamin A.

Skin is a major retinoid responsive tissue. Cells in epidermis & dermis contain receptors that mediate the biological effect of all forms A

Lpi.oregonstate.edu./mic/other-nutrients/essential-fatty-acids

Vitamin A and Skin

In the skin Retinol is converted to Retinal & then to Retinoic Acid (RA).

RA modulates gene expression & influences cellular processes in epidermis & dermis – exerting potent effects on the skin.

Lpi.oregonstate.edu./mic/other-nutrients/essential-fatty-acids

Vitamin A and Skin

Bound to retinol binding proteins, Retinol reaches the skin via capillaries in the dermis.

Keratinocytes & fibroblasts convert Retinol first to Retinal & then to All Trans Retinoic acid.

Lpi.oregonstate.edu./mic/other-nutrients/essential-fatty-acids

Vitamin A and Skin

Cells in both the epidermis & dermis are targets for retinoids.

Skin cells can convert beta carotene to Vitamin A metabolites, this can serve as a precursor to epidermal Vitamin A.

Not everyone can do this.

Lpi.oregonstate.edu./mic/other-nutrients/essential-fatty-acids

Immune function – it helps to protect against infections by ensuring the effectiveness of mechanical barriers (like skin), and increasing the production and efficacy of protective cells (eg lymphocytes).

Role of Nutrition in Health and Disease by W.E. Cornatzer, Pub Thomas. Page 236

Deficiency symptoms

Epithelial tissue – respiratory, GIT, Genitourinary, eyes.
Widespread keratinisation – normal epithelium is replaced with stratified keratinising epithelium – hyperproliferation.
Atrophy of many glands, sweat & sebaceous glands.

Wolbach SB, Howe PR. Tissue changes following deprivation of fat soluble vitamin A. J Exp Med 1925; 42(6): 753-777. (PubMed)

Deficiency symptoms

Delayed wound healing.
UV increases proteolytic enzymes that degrade dermal collagen. Vitamin A prevents damage by interfering with the pathways that mediate these enzymes.
Collagen – retinoic acid.

Wolbach SB, Howe PR. Tissue changes following deprivation of fat soluble vitamin A. J Exp Med 1925; 42(6): 753-777. (PubMed)

Auto-Immune Skin Conditions

Psoriasis
Skin

Psoriasis Summary

- **A chronic skin condition characterized by scaling and inflammation.**
- **Scaling occurs when cells in outer layer of skin reproduce faster than normal and pile up on the skin surface.**

- **Some types can be pus-filled blisters or in skin folds.**
- **Can worsen in winter, with certain medications, infections & psychological stress.**
- **Immune system reacting to the skin cells.**

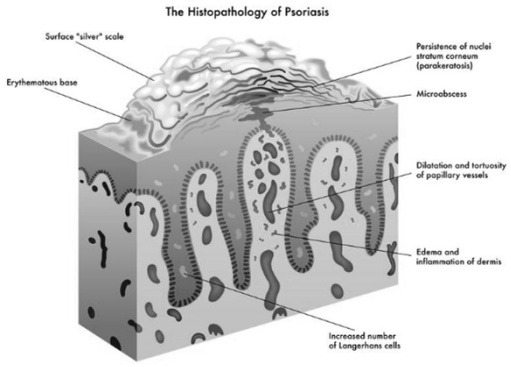
Palfreeman AC, McNamee KE, McCann FE (March 2013). "New developments in the management of Psoriasis & Psoriatic Arthritis: a focus on apremilast" Drug Des Devel Ther. 7: 201-210 doi: 10.2147/DDDT. S32713. PMC 3615921 PMID 23569359

- **Study suggested that Vitamin D3 cream can help.**
- **Napkin psoriasis – subtype in infants. Red papules with silver scale in nappy area, may extend to torso & limbs. Often misdiagnosed as napkin dermatitis (nappy rash).**

"Questions & Answers about Psoriasis" National Institute of Arthritis & Musculoskeletal & Skin Diseases. October 2013. Archived from the original on 8 July 2015. Retrieved 1 July 2015

- **Mechanism of the disorder.**
- **Abnormally excessive & rapid growth of epidermal layer of the skin.**
- **Skin cells replaced 3-5 days, normally 28-30 days.**
- **Believed to stem from premature maturation of keratinocytes induced by infl.**

Nestle FO, Kaplan DH, Barker J (2009). "Psoriasis". N Engl J Med 361 (5): 496-509. doi: 10.1056/NEJMra 0804595. PMID 19641206



Scleroderma
Connective tissue

- **Group of AI diseases resulting in changes to the skin, blood vessels, muscles and internal organs.**
- **Symptoms include areas of thickened skin, stiffness, tiredness, poor blood flow to fingers and toes in the cold.**

"Scleroderma" NORD (National Organisation for Rare Disorders). 2007. Archived from the original on 8 September 2016. Retrieved on 14 July 2017.

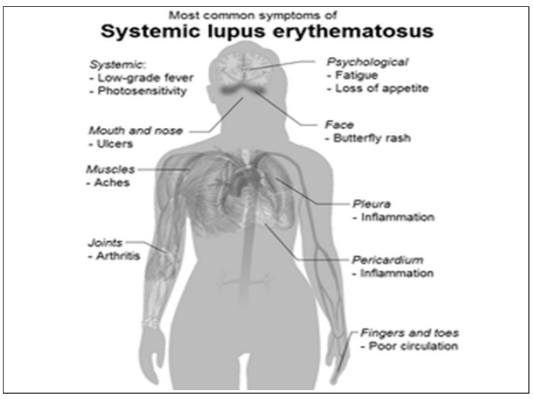
- **Underlying mechanism – abnormal growth of connective tissue occurring as a result of body immune system attacking healthy tissue.**

"Scleroderma" NORD (National Organisation for Rare Disorders). 2007. Archived from the original on 8 September 2016. Retrieved on 14 July 2017.

- **Characterised by increased synthesis of collagen leading to the sclerosis.**
- **Production of altered connective tissue.**

Valanciene G, Jasaitiene D, Valnkeviciene S (2010) "Pathogenesis & Treatment Modalities of localised Scleroderma". Medicina. 46 (10): 649-56. PMID 21393982. Archived from the original on 2014-03-06

Systemic Lupus Erythematosus
Skin & body parts



- **Immune system attacks healthy tissues in many parts of the body.**
- **Symptoms: painful & swollen joints, fever, chest pain, hair loss, mouth ulcers, swollen lymph nodes, tired, red rash on the face.**
- **Periods of flares & remission**

Handout on Health: Systemic Lupus Erythematosus" www.niams.nih.gov. February 2015. Archived from the original on 17 June 22016. Retrieved 12 June 2016

- **Factors to increase risk: genetics, environment, female sex hormones, sunlight, smoking, Vitamin D deficiency, infections.**
- **70% have skin symptoms – classic molar rash (butterfly).**

Handout on Health: Systemic Lupus Erythematosus" www.niams.nih.gov. February 2015. Archived from the original on 17 June 22016. Retrieved 12 June 2016

Vitiligo
Skin

- **Patches of skin losing their pigment. The patches of skin become white & usually have sharp margins.**
- **Often the patches begin on areas of skin that are exposed to the sun.**

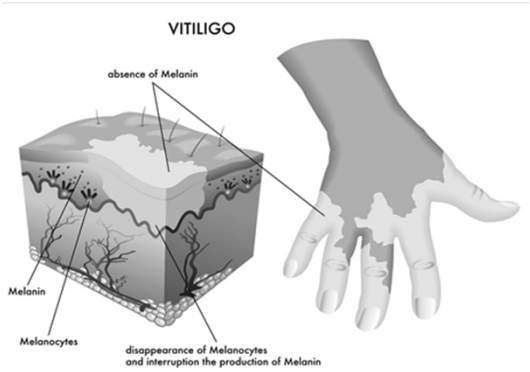
Ezzedine,K; eleftheriadon, V; Whitton,M; Van Geel, N (4 July 2015) "Vitiligo" Lancet 386 (9988): 74-84 doi: 10.1016/s0140-6736(14) 60763-7. PMID 25596811

- **Depigmented skin tends to occur on extremities. The loss of skin pigmentation is particularly noticeable around body orifices – mouth, eyes, nostrils, genitalia, umbilicus.**

Ezzedine,K; eleftheriadon, V; Whitton,M; Van Geel, N (4 July 2015) "Vitiligo" Lancet 386 (9988): 74-84 doi: 10.1016/s0140-6736(14) 60763-7. PMID 25596811

- **Autoimmune disease that results in destruction of skin pigment cells. The immune system attacks & destroys the melanocytes.**

Ezzedine,K; eleftheriadon, V; Whitton,M; Van Geel, N (4 July 2015) "Vitiligo" Lancet 386 (9988): 74-84 doi: 10.1016/s0140-6736(14) 60763-7. PMID 25596811



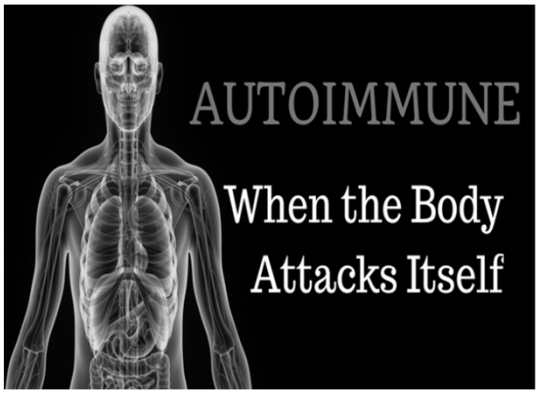
- **Clinically we have found that sufferers have high levels of hydrogen peroxide. Used in body as anti parasitic.**

Ezzedine,K; eleftheriadon, V; Whitton,M; Van Geel, N (4 July 2015) "Vitiligo" Lancet 386 (9988): 74-84 doi: 10.1016/s0140-6736(14) 60763-7. PMID 25596811

Nature Reviews Immunology Journal
Vitamin Effects on the Immune System – Vitamins A and D Take Centre Stage

- **Crucial effect on Immune System**
- **Modulate Immune processes**
- **Lymphocyte activation**
- **T helper cell differentiation**
- **Production of Antibodies**
- **Regulation on Immune response**
- **Modulate tissue specific immune responses**
- **So preventing & treating inflammation & Autoimmunity**

Nat Rev Immunol. 2008 Sep 8(9): 685-698 doi: 10 1038/nm 2378



Autoimmunity is the presence of self-reactive cells, auto antibodies that attack your own tissue.

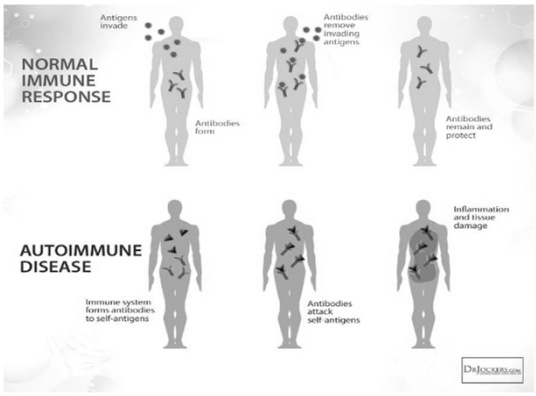
Harrison's Principles of Internal Medicine: Volumes 1 and 2, 18th Edition (18 ed.). McGraw-Hill Professional. 2011-08-11. ISBN 9780071748896. Archived from the original on 2016-05-29

Normally the adaptive immune system produces T cells & B cells that are capable of being reactive with self-antigens. BUT these are usually killed prior to becoming active, they are removed by regulatory cells.

Harrison's Principles of Internal Medicine: Volumes 1 and 2, 18th Edition (18 ed.). McGraw-Hill Professional. 2011-08-11. ISBN 9780071748896. Archived from the original on 2016-05-29

- **When these mechanisms fail leads to a reservoir of self-reactive cells that become active.**
- **Prevention of self reactive cells takes place in thymus as the T cell is developing into a mature immune cell.**

Harrison's Principles of Internal Medicine: Volumes 1 and 2, 18th Edition (18 ed.). McGraw-Hill Professional. 2011-08-11. ISBN 9780071748896. Archived from the original on 2016-05-29



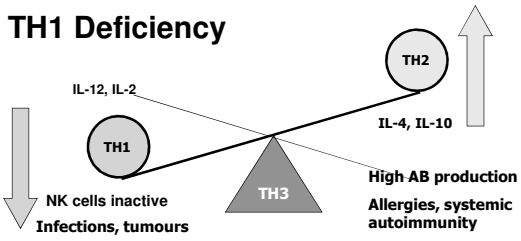
In autoimmunity the condition arises through aberrant reactions of the human adaptive AND innate immune systems. In autoimmunity, the patient's immune system is activated against the body's own proteins.

The Immune System

TH2 weakens – TH1 strengthens

TH2 Excess

TH1 Deficiency



Secrets of your cells

The basic job of our immune system is to recognise "self" & "other", while collaborating with the brain, gut, thoughts, beliefs and hormones.

Sondra Barrett PhD "Secrets of Your Cells – Discovering Your Body's Inner Intelligence". 2013 ISBN 978-1-60407-819-0

- **In AI the recognition of "self" is compromised – our own cells are no longer identified as "ours" – become the enemy**

Sondra Barrett PhD "Secrets of Your Cells – Discovering Your Body's Inner Intelligence". 2013 ISBN 978-1-60407-819-0

Emotional Reflection

"When have I lost the ability to discriminate between people, places or behaviours that are well matched to me and those that are not?"

Sondra Barrett PhD "Secrets of Your Cells – Discovering Your Body's Inner Intelligence". 2013 ISBN 978-1-60407-819-0

Emotional
Crisis of
Self Identity

Emotional Reflection

- **Emotionally lost self identity**
- **Can't differentiate between yourself & others**
- **Have become like others**
- **Influenced by others, taken on the behaviour of others**
- **Not true to yourself**

Sondra Barrett PhD "Secrets of Your Cells – Discovering Your Body's Inner Intelligence". 2013 ISBN 978-1-60407-819-0

Challenge with
TH1 and TH2 markers

Low Th1 and high Th2

Th1 strengthens – Th2 weakens

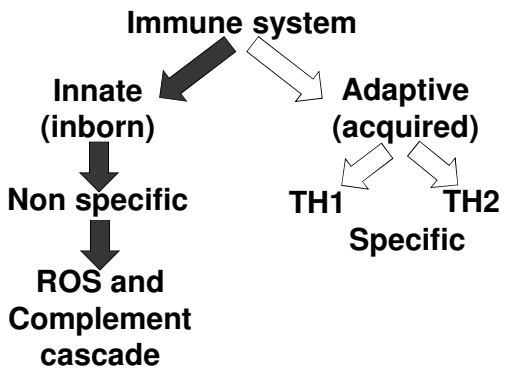
The Immune Connection

There are two parts of the human immune system

1. The innate immune system

2. The adaptive immune system

The solution in the majority of patients is to optimize innate immune function rather than focus only on adaptive immune response.



In the innate immune system the body's initial response is to eliminate microbes & infections immediately or within hours.

Innate immune system
Non-specific defence against pathogens.

No long-lasting or protective immunity for the host.

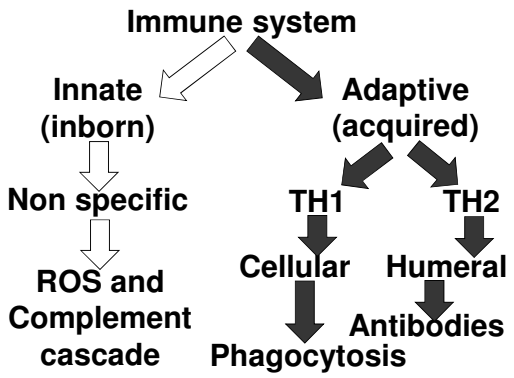
The adaptive immune system does this.

Innate immune system

Triggers inflammation ***
Identifies & removes foreign substances

Activates adaptive immune system

The Adaptive Immune System



It takes 5-7 days after encountering a new antigen for the adaptive immune system to reach full activity…
…why a "cold" lasts about a week.

Adaptive immune system - T-cells & B-cells

T Lymphocytes mature in thymus
T Helper cells
T Regulatory (T suppressors)

B Lymphocytes mature in bone marrow. Make antibodies
Spleen

Helper T-Cells counterbalance the function of Suppressor T-Cells

Ideally, TH1 Helper T-Cells should be in equal balance with TH2 Helper T-Cells.

When either subset of Helper T-Cells dominate, illness results.

Stimulate TH1 cells

Zinc
Omega 3
L. Acidophilus
L. Casei
L. Rhamnosus
L. Paracasei
L. Salivarius
B. Longum
L. Brevis
S. Boulardei

Chlorella
Lemon balm

Echinacea
Reishi mushroom
Smart Vitamin C
Olive leaf tinc.

Vitamin D

Astragalus

Inhibit TH2 cells

Smart Turmeric
Star anise
Ginger
Cinnamon
L. Reuteri
L. Plantarum
L Salivarius
L. Lactic

Olive leaf tincture
Astragalus

Quercitin
Bilberry
Black cumin oil
Hesperidin plus
Omega 3

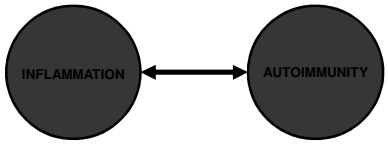
Milk thistle

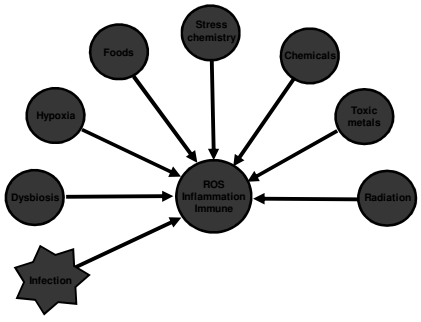
Zinc
Magnesium
Vit D

TH1 and TH2 modulating compounds:
Probiotics
Vitamin A
Vitamin E

T-regulatory supporting compounds:
Vitamin D
EPA and DHA

RELATIONSHIP BETWEEN INFLAMMATION AND AUTOIMMUNITY





Dysbiosis Testing

- **Check individual digestive enzymes**
- **Parasites and fungal overgrowth**
- **Re-balance gut flora**
- **5 R Program – Remove, Replace, Re-inoculate, repair, Regenerate**

Infections Bacteria
Zinc
Vitamin C, Vitamin D, Vitamin A
Arginine Olive leaf
Ginger Echinacea
Golden seal Colloidal silver
Immune WHY600

Black walnut tincture

Infections Virus
Ionic Iron, Calcium, Zinc
Vitamin C, Vitamin A, Vitamin D
Echinacea Astragalus
Olive leaf Garlic
Colloidal silver
Black walnut tincture
Immune WHY 600

NAC for Post virus

Infections Parasites
Protease DR – half hour after meal
Iodine
Artemesia Annua
Black walnut tincture and caps
Wormwood
Wormwood combination
AP Formula

Probiotics

Infections GUT -Lipopolysaccharides
Digestive enzymes

Prebiotics - Inulin
Probiotics
Fibre – Psyllium
Chlorella
Water
Check for Folates, Zinc, Glutamine.

Toxins – Toxic metals
Black walnut
Coriander herb **Coriander spice**
Lemon balm **Lipoic acid**
Yarrow **Glutathione**
Vitamin C for nickel
Potassium ascorbate
NAC
CBS
Allclear

Toxins – Chemicals

Black walnut	
Coriander spice	**NAC**
Lemon balm	**Rosemary**
Yarrow	**Other spices**
Chlorella	**Allclear**
CBS	
Zinc	**Potassium ascorb**
Nutrient Phase 1&2	
Taurine SA	**Ornithine SA**

Toxins – Radiation

Chlorella
Coriander spice
Smart Vitamin C (Rutin)
Smart Turmeric
Allclear
CBS
Ornithine SA
Taurine SA
Yarrow

Oxygen Deficiency - Hypoxia

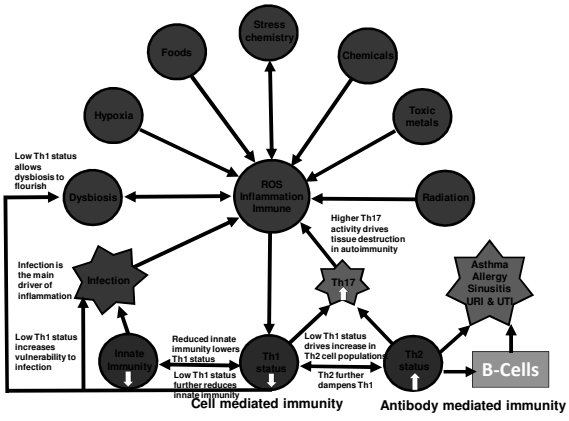
Iron
Adenosylcobalamin
Magnesium SA
Zinc SA
Pyridoxal-5-phosphate
Riboflavin-5-phosphate / FADH2
Folinic / CH2H4Folate, 5MTHF
Fatty Acids

Cortisol Deficiency

Magnesium SA
Zinc SA
Pyridoxal-5-phosphate
Riboflavin-5-phosphate / FADH2
Vitamin C

Smart Adrenal
Adrenal Support

Consequences of Inflammation on the Immune System



Chronic Infection

- Infection is the main driver of inflammation
- Reduced innate immunity lowers TH1 status
- Low TH1 further reduces innate immunity
- Low TH1 drives TH2 cell proliferation

Samuel F. Yanuck "Immunology Home Runs for Non-Immunologists" Cogence Immunology.

Chronic Infection

- A combination of low innate immunity, low TH1 and high TH2 leads to increased TH17

Samuel F. Yanuck "Immunology Home Runs for Non-Immunologists" Cogence Immunology.

Chronic illness

- TH2 up leading to asthma, allergy, sinusitis, URI
- Low TH1 increases vulnerability to infection and allows dysbiosis to flourish

Samuel F. Yanuck "Immunology Home Runs for Non-Immunologists" Cogence Immunology

Hollow space pathogens

- **It is essential to address hollow space pathogens like dysbiosis, sinusitis, chronic UTIs**
- **Hollow space chronic pathogen burden leads to persistent TH17 response & autoimmune destruction**

Samuel F. Yanuck "Immunology Home Runs for Non-Immunologists" Cogence Immunology

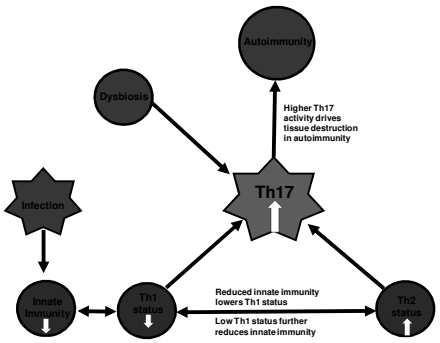
Importance of Th17

High Th17 activity drives tissue destruction in Autoimmune Disease

Function of TH17 cells

- **Play a role in the adaptive immune system protecting the body against pathogens**
- **Maintain the mucosal barriers**
- **Implicated in Auto-immune and inflammatory disorders**

Hartigan-O'Connor DJ, Hirao LA, McCune JM, Dandekar S (May 2011). "Th17 cells and regulatory T cells in elite control over HIV and SIV". *Current Opinion in HIV and AIDS*. **6** (3): 221–7.



T-regulatory cells (Tregs)

- **Tregs formerly known as T suppressor cells, are a type of T cell.**
- **Maintain tolerance to self antigens and prevent autoimmune disease**

Bettelli E, Carrier Y, Gao W, Korn T, Strom TB, Oukka M, Weiner HL, Kuchroo VK (May 2006). "Reciprocal developmental pathways for the generation of pathogenic effector TH17 and regulatory T cells". *Nature*. **441** (7090): 235–8. doi:10.1038/nature04753. PMID 16648838.

T-regulatory cells (Tregs)

- **Involved in shutting down immune responses after invading organisms have been eliminated**

Shevach EM (2000). "Regulatory T cells in autoimmmunity*". *Annual Review of Immunology*. **18**: 423–49. doi:10.1146/annurev.immunol.18.1.423. PMID10837065.

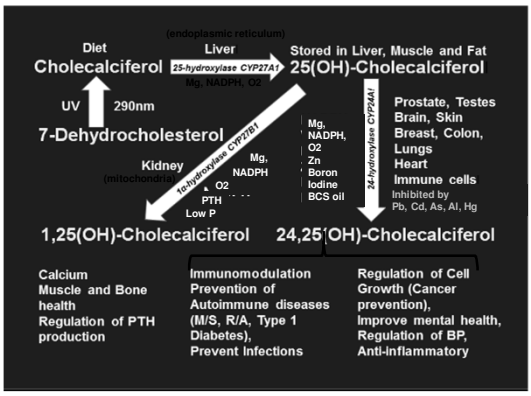
Nutritional Remedies

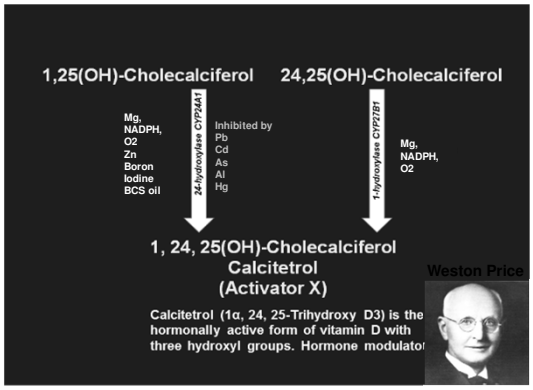
Essential Fatty Acid Deficiency
Borage seed oil GLA
Evening primrose oil GLA
Omega 3 EPA+DHA
DHA
Omega 3,6 and 9
Flax seed oil Hempseed oil
Black cumin seed oil
Smart Thinking oil, Rapeseed oil

Mineral Deficiency
Calcium SA
Magnesium SA
Selenium phosphate
Zinc SA

Anti-Inflammatory Remedies
Hesperidin Plus Capsules –
hesperidin plus bromelain
Quercetin Capsules
Smart Turmeric capsules

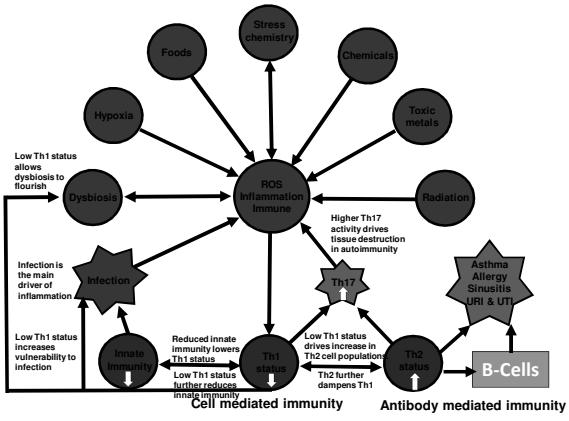
Vitamin D





The VDR may be involved in cell proliferation and differentiation. Vitamin D affects the immune system, and VDRs are expressed in several white blood cells, including monocytes and activated T and B cells.

Watkins RR, Lemonovich TL, Salata RA (May 2015). "An update on the association of vitamin D deficiency with common infectious diseases". *Canadian Journal of Physiology and Pharmacology*.



Testing for Autoimmunity

1. Find Subconscious meridian.
2. Check Autoimmune status:
   1. From strength, test Th17. If weak then an autoimmune issue.
   2. From weakness, test Th1. If strengthen then low in Th1.
   3. From strength, test Th2. If weak then high in Th2.

Testing for Autoimmunity

4. Determine if there is inflammation from the gut affecting autoimmunity.
   1. From Strength test LPS.
   2. From Strength test Dysbiosis.
   3. If 1 or both are weak then check Gut: digestive enzymes, parasites, fungus, probiotics.

Testing for Autoimmunity

5. Check if infection is causing autoimmunity.
   1. From strength test Acute virus. If weak look for a antiviral remedy.
   2. If weak to Bacteria – find remedy.
   3. If weak to Post Virus, virus into the cell & changed the DNA. SNIP markers against Th17.
6. If none of the above test SNIPs from strength.
7. Check toxins and foods.
8. Check Allergy IgE, IgG, IgM.

End of Autoimmunity

Little Gems

B1 Deficiency

Skin rashes

Patient has a variety of complaints. "I have this skin trouble. It breaks out all over. It starts out with this one little patch. I haven't changed my diet any. It itches."

Collected Published Articles and Reprints by Dr G. Goodheart

B2 for Skin
Maintenance of normal skin & mucous membranes.
Deficiency – cracks & sores around the corner of the mouth.
Deficiency of B2 may occur in intensive sun tanning.
Can cause skin ulceration & conjunctivitis.

Role of Nutrition in Health & Disease by W.E. Cornatzer, Pub Thomas, Page 307.

B3 for Skin

Deficiency can cause:
canker sores, thick skin, callouses.
Dermatitis.

Role of Nutrition in Health & Disease by W.E. Cornatzer, Pub Thomas, Page 307.

Vitamin B3 Deficiency

Pellagra

1. **Diarrhoea**
2. **Dermatitis**
3. **Dementia**

Role of Nutrition in Health and Disease by W.E. Cornatzer, Pub Thomas. Page 326

B6 for Skin
Deficiency can cause:
- **Inflammation of skin & mucosa**
- **Dry, rough skin**
- **Cracking lips**
- **Retarded healing**
- **Mouth ulcers**

Role of Nutrition in Health & Disease by W.E. Cornatzer, Pub Thomas, Page 307.

Campbell de Morgan spots

B6 for Skin
Deficiency can cause:
Little red spots, like small aneurysms. P5P plays a role in lowering high homocysteine. Campbell de Morgan spots.

Role of Nutrition in Health & Disease by W.E. Cornatzer, Pub Thomas, Page 307.

Dr Goodheart says

Think P5P in cases of acne.
Can also be used as a cream.

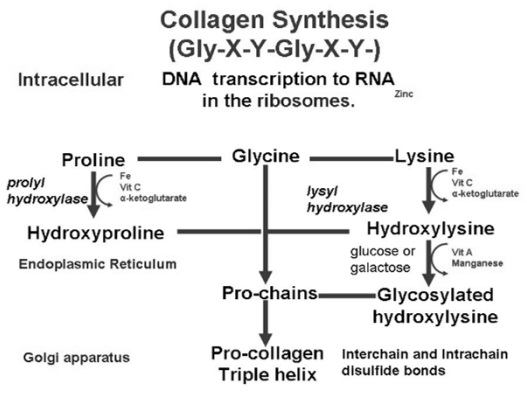
Also think Zinc (repairs genes) and Iodine (balances hormones)

Being a Family Doctor by George Goodheart and Walther H. Schmitt published by Lance West DC

H4 Biopterin* clinically has been found to have an important role in the synthesis of collagen via the conversion of

Lysine to Hydroxylysine
Proline to Hydroxyproline

*Chris Astill-Smith



Biotin Deficiency
Symptoms include hair loss, dry scaly skin, cracking in the corners of the mouth, swollen and painful tongue, dry eyes.

*Role of Nutrition in Health and Disease by W.E. Cornatzer, Pub Thomas. Page 296

Next step in Patient Protocol

Next stage of Protocol

Referring to the subconscious.

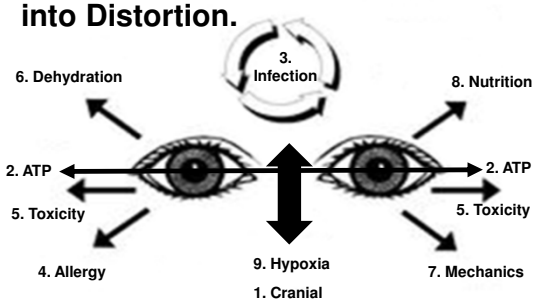
In Strength – subconscious meridian on forehead.

In weakness – TL greater wings of sphenoid. Or use the weak meridian muscle.

Patient Protocol

1. With the subconscious meridian, test Eyes into Distortion.
2. When found the first remedy. From weakness put the remedy – strong.
3. Close eyes then re-test. Strong.
4. Open eyes and re-test. If weak there are more remedies required.
5. EID again. Repeat the process until patient is strong to close eyes/open eyes challenge.

Challenge for cause using Eyes into Distortion.



ALWAYS CHECK FOR TOLERANCE TO THE NUTRIENTS

Additional Information
Photo-damage
Nutrients required by skin

Photodamage

UV penetration of the skin aids in Vitamin D synthesis.
Potential to damage cells & extracellular components skin.
Free radicals are produced when light energy is absorbed by cellular components.

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Photodamage - sunburn

Skin laxity, wrinkling, thickening, changes in texture, abnormal skin growths & impaired wound healing.
Skin discolouration – chronic UV exposure – solar lentigines or liver spots.

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Photodamage - sunburn

Chemical sun screens expose skin to chemicals that disrupt or damage the barrier function or induce inflammatory reactions in the skin.

UV depletes A/O levels – Vitamin C, E. Take A/Os & nutritional support for repair

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Nutrients required by the skin

Vitamin C & Skin Health

Anti-oxidant properties & role in collagen production.

Found in high levels in both epidermis & dermis. Transport proteins in both.

Excessive exposure to UV & pollutants lowers Vitamin C.

McArdle F, Rhodes LE, Parslew R, Jack CL, Friedmann PS, Jackson MS. UVR induced oxidative stress in huma skin in vivo: effects of oral Vitamin C supplementation. Free Radic Biol Med 2002; 33:1355-1362 (PubMed)

Vitamin C & Skin Health

Scurvy, decline in collagen, leading to disruption of connective tissue & fragility of blood vessels.
Early symptoms – thickening of SC & spots of small subcutaneous bleeding.
Wound healing impaired, open

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Vitamin C & Photo-protection

Vitamin C reduces UV related DNA damage & lipid peroxidation, limits the release of pro-inflammatory cytokines & protects against apoptosis, increases cell survival following UV exposure.

Tebbe B, Wu S, Gellen CC, Eberle J, Kodelja V, Orfanos CE. L-ascorbic acid inhibits UVA induced lipid peroxidation & secretion of IL-1 alpha and IL-6 in cultured human keratinocytes in vitro. J. Invest Dermatol 1996; 106:1086-1089 (PubMed)

Vitamin C – Awesome!!

Vitamin C increases the proliferation of fibroblasts, a capacity that is decreased with age.
Vitamin C stimulates DNA repair in cultured fibroblasts.

Phillips CL, Combs SB, Pinnell SR. Effects of ascorbic acid on proliferation & collagen synthesis in relation to the donor age of human dermal fibroblasts. J. Invest Dermatol 1994; 103:228-232. (PubMed)

Vitamin C – Wound Healing

Limit free radical damage.
Increased demand for dermal collagen.
Promotes keratinocyte differentiation, stimulates the formation of epidermal barrier & re-establishes the SC.

Phillips CL, Combs SB, Pinnell SR. Effects of ascorbic acid on proliferation & collagen synthesis in relation to the donor age of human dermal fibroblasts. J. Invest Dermatol 1994; 103:228-232. (PubMed)

Vitamin C – Dry Skin

High Vitamin C correlated with a decreased risk of dry skin.
Shown to promote the synthesis of barrier lipids which establish a functioning SC with low water permeability.

Cosgrove MC, Franco OH, Granger SP, Murray PG, Mayes AE. Dietary nutrient intakes & skin aging appearance among middle aged American women.AMJ Clin Nutr 2007; 86:1225-1231 (PubMed)

Vitamin C – Smoking

Smoking leads to increased wrinkling & decreased collagen synthesis.

Clinic – put smokers on Vitamin C. Case – young man motorbike accident .

Cosgrove MC, Franco OH, Granger SP, Murray PG, Mayes AE. Dietary nutrient intakes & skin aging appearance among middle aged American women.AMJ Clin Nutr 2007; 86:1225-1231 (PubMed)

Vitamin D

Vitamin D & Skin Health

D3 is synthesized in the keratinocytes of the epidermis.
Activated forms regulate the proliferation & differentiation of keratinocytes.
Regulate hyper proliferation.

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Vitamin D & Skin Health

In temperate latitudes – insufficient UV radiation for Vitamin D3 synthesis from September 21 to March 21.

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Vitamin D & Skin Health

Because uncontrolled proliferation of cells with certain mutations may lead to cancer, Vitamin D may protect against certain cancers.

Potent immune modulator in the skin.

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Vitamin D & Skin Health

Photo protection – decrease DNA damage, reduce apoptosis, increase cell survival & decrease erythema.

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Vitamin D & Skin Health

Wound healing – promotes wound healing & tissue repair. Modulates inflammation in the skin, induces angiogenesis & improves re-epithialisation.

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Zinc & Skin Health

Present in both the epidermis & dermis. 5 fold higher in epidermis.

1. **Stabilises Cell membranes**
2. **Serves as an essential co-factor or several enzymes.**
3. **Participates in basal cell mitosis & differentiation.**

Lansdown AB, Mirastschijski U, Stubbs N, Scanlon E, Agren Ms. Zinc in wound healing: Theortical, experimental & clinical aspects. Wound Repair Regen. 2007; 15(1):2-16 (PubMed)

Zinc Deficiency

Dermatitis, alopecia, pigmentation changes, decreased hair & nail growth, skin lesions on body sites exposed to repeated pressure. Zinc oxide used in mineral or physical sunscreens – absorbs UVR across the UV spectrum.

Lansdown AB, Mirastschijski U, Stubbs N, Scanlon E, Agren Ms. Zinc in wound healing: Theortical, experimental & clinical aspects. Wound Repair Regen. 2007; 15(1):2-16 (PubMed)

Selenium & Skin Health

Present in skin cells as a component of the anti-oxidant enzymes that protect the skin from harmful free radicals. Selenium deficiency associated with increased risk of several types of cancer, including skin.

Hatfield DL, Tsuji PA, Carlson BA, Gladyshev VN, Selenium & selenocysteine roles n cancer, health & development. Trends Biochem Sci 2014; 39(3):112-120 (PubMed)

Selenium & Skin Health

Imbalance can cause skin abnormalities, altered hair follicle cycling & epidermal atrophy, possibly due to increased apoptosis of keratinocytes.

Se protects keratinocyte membranes V free radicals.

Hatfield DL, Tsuji PA, Carlson BA, Gladyshev VN, Selenium & selenocysteine roles n cancer, health & development. Trends Biochem Sci 2014; 39(3):112-120 (PubMed)

Selenium & Skin Health

Deficiency can include signs of hypopigmentation of skin and hair.

Hatfield DL, Tsuji PA, Carlson BA, Gladyshev VN, Selenium & selenocysteine roles n cancer, health & development. Trends Biochem Sci 2014; 39(3):112-120 (PubMed)

Post Virus positive test

- **Change in the genetic structure**
- **Post virus has changed the programme**
- **Virus has changed the code on the chromosome, acquire/inherit**
- **Co-enzyme is not the cause – but a result of virus changing programme**
- **Mutation is caused by infection**

Therapy Localisation Technique
Identify spinal level by therapy localisation.
Perform spiral field force prior to pulsing together. Practitioner puts one finger on spinal level and the other on the symphysis menti. Pulse together for about one minute.

If you cannot get a positive TL from the spinal level you are probably using a hyper muscle (e.g. a deltoid lung related muscle).

Must only be done at the end of a therapeutic session as all diagnostic markers will be negated.

Wound Healing
During healing:
1. **Clear damaged area of infection.**
2. **Re-establish the epidermal barrier.**
3. **Re-construct the damaged underlying dermis**

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Wound Healing

Inflammatory cells are recruited to the area. First neutrophils to clear damaged tissue & infectious particles. They signal for the macrophages.
Some macrophages – assist in removal of debris, others co-ordinate the remodelling tissue.

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Wound Healing

Re-epithialisation & dermal repair.
Restore skin barrier to provide safe environment for tissue remodelling underneath.
Epidermal keratinocytes flow to damaged area to connect with the matrix of the dermis.

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Wound Healing

Rapid proliferation of the epidermis to fill in the wound area.
Fibroblasts come in action.
Fibrin clot is often established if blood vessels were ruptured.
Fibroblasts stimulate removal of fibrin.

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Wound Healing

Then replace the clot with a more stable collagen matrix. During a later stage, fibroblasts are involved in re-ordering these collagen fibres into a more stable structure, integrated with elastin.

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Wound Healing

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Magnitude of the skin

- **Adult skin extends approx 2 metres square (20 sq ft)**
- **2.5 mm thick**
- **Adult skin makes up 15-20-% of body weight**
- **Every minute 30,000 – 40,000 dead skin cells fall off or are sloughed off the body**

Magnitude of the skin

- **2-3 billion cells shed daily**
- **In 4-6 weeks the body will have a whole new layer of skin**
- **Shed around 40 pounds of skin in a lifetime**

Magnitude of the skin

- **Each cm of skin has 6 million cells**
- **5000 sensory points**
- **100 sweat glands**
- **15 sebaceous glands**