Pills, Potions and Placebos in Ophthalmology.

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• Definition of scientist:
• Definition of scientist:
• Definition of scientist:
  – *one who is trained in the scientific method.*

• And the scientific method relies on developing a hypothesis and testing it. If the outcome is repeatable then the test/treatment is extended.
• Progress may also occur with other pathways such as use of
  – logic,
  – experience
  – intuition,
  – other belief systems.
• The problem is for scientists is science
  – doesn’t/hasn’t explained everything
    • Eg déjà vu, ghosts, supernatural events
  – hasn’t cured everything
    • Eg common cold, ageing, cancer
• In this void alternative belief systems have evolved.
  – Some with historical precedent
    • Myths and Legends
  – Some with religious precedent
    • Exorcism, Prayer, Indulgences
• In this void alternative belief systems have evolved.
  – Pseudo science
    • Pseudo- comes from the Greek for false/lie and refers particularly to something not genuine.
  – Quasi science
    • Quasi- comes from the Latin for almost and refers to something that is almost something else.
• Let me give an example.

It starts with Dr. Ignatz von Peczely
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   When he was a lad about 10 years of age he captured an owl in the family garden in Hungary......
Let me give an example.
It starts with Dr. Ignatz von Peczely
When he was a lad about 10 years of age he captured an owl in the family garden in Hungary......
anyway when the owl tried to escape the father of iridology broke the owl’s leg
• He found a black dot develop in the 6 o’clock position of the iris
Put in iridology chart and show position of leg at 6 o'clock.
• Iridology don’t normally use the term diagnosis rather the word “analysis”.
  
  – To discern by observation of the irides the various stages of tissue inflammation- acute, subacute, chronic and degenerative.
• The constitution, organ toxicity, spasticity of bowel, pressure on the heart are examples that iridology recognise and manage usually by supplements and dietary manipulation.
• Arcus senilis.
• “This sign is an indication of cerebral anemia”
  – Proper and vigorous exercise are needed to get
    the blood moving and to give the brain the oxygen
    it needs. ¹

¹ Iridology Simplified  Bernard Jensen. DC (1980)
To date...... iridology has not replaced radiology or made any neurologists redundant.
• Other popular complementary practitioners include:
  – homeopaths
  – osteopaths,
  – chiropractors,
  – acupuncturists.
• Other popular complementary practitioners include:
  – homeopaths
  – osteopaths,
  – chiropractors,
  – acupuncturists.
• And then there are the complementary medicines.
  – herbal medicines,
  – bee products,
  – homoeopathic products,
  – dietary supplements,
  – minerals,
  – and any other medicines containing animal or plant extracts
Will just briefly discuss

acupuncturists and homeopaths
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• Acupuncture

the stimulation of acupoints along the skin purporting to correct imbalances in the flow of qi through channels called meridians.
• Homeopathy

Based on the concept of ‘treating like with like’. In other words treat an illness, with tiny doses of a substance that in large doses would actually cause the symptoms of the illness.
• Homeopathy

An example would be to treat stiffness with strychnine. (v.v.v.v.v dilute)
• Homeopathy

Remedies are made from plant, mineral and animal substances. The substances are diluted and homeopathy uses a logarithmic scale.
• Homeopathy

Homeopaths believe that the original substance leaves a molecular ‘blueprint’ in the water that induces healing.
• Homeopaths or Homeopathic Practitioners.

In reality doesn’t appear to cause much harm.¹.

1. Adverse Effects of Homeopathy
A Systematic Review of Published Case Reports and Case Series
P. Posadzki, A. Alotaibi, E. Ernst.
• And so to Complementary Medicines
• And so to Complementary Medicines
  – herbal medicines,
  – bee products,
  – homeopathic products,
  – dietary supplements,
  – minerals,
  – and any other medicines containing animal or plant extracts
And NZ consumers are sold.

- NZ natural products industry has exceeded $1 billion in revenue. ¹
- ¾ of NZ households use a dietary supplement. ²

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• Questions
  – From a consumer’s perspective
  – From a regulator’s perspective
  – From a clinician’s perspective

Cant answer this all…
• Natural Health and Supplementary Products Bill

– Formally the Natural Health Products Bill
• Currently the 2\textsuperscript{rd} reading
From 1992 to March 2009 only 344 reports identified a complementary medicine as a suspect medicine. Of the 344 reports received 25% described serious adverse events.¹

Significant harm

Harm is irreversible

Risk is involuntary

High probability of harm occurring

High case for intervention

Low probability of harm occurring

Possible case for intervention

Harm is reversible

Risk is voluntary

High probability of harm occurring

Possible case for intervention

Low probability of harm occurring

Possible case for intervention

Risk is involuntary

High probability of harm occurring

Possible case for intervention

Low probability of harm occurring

Possible case for intervention

Risk is voluntary

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Low probability of harm occurring

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No significant harm
Back to Eyes......
Natural Medicines for the Eyes
or
“My friend has told me about .... What do you think doctor?”
Natural Medicines

- Marijuana
- Ginkgo Biloba
- Eyebright
- Bilberry
- Antioxidants
- Lutein
- Herbal Eyewashes
- Nutritional supplements
Marijuana

• Legal use advocated for
  – Chemotherapy-related nausea
  – Appetite stimulation for HIV wasting
  – Movement disorders
  – Analgesia
  – Glaucoma
Marijuana and Glaucoma

- Advocated initially in the 70’s
- Limited options for glaucoma treatment:
  - miotics, epinephrine, acetozolamide
- Various studies have produced data from a total of 300 volunteer subjects
- Largest single study group was 40 people
Marijuana and Glaucoma

• Inhaled marijuana lowers IOP in 60-65 %\textsuperscript{1}
• Smoking 1 joint reduces IOP by 25 % \textsuperscript{1,2,3,4}
• Impressive results but......

1. J.Pharm.Pharmacol 1981;33:40-1,
2. Ophthalmology 1980;87:222-8,
3. 3 Pharmacological Reviews 1986;38:1-17,
Marijuana and Glaucoma

• Duration of effect only 3-4 hrs

• For a consistent response one would have to smoke:
  – 8-9 joints / day
  – 3000 joints / year
No green light for grass in glaucoma!
Ginkgo Biloba

• Used in Chinese medicine for 5000 yrs
• Leaf extract of Maidenhair tree
• “Fossil” tree, only survivor of earliest family of trees, from Permian period 250m yrs ago
• Most commonly prescribed drug in Germany
Ginkgo Biloba - pharmacology

- Contains 60 known bioactive compounds
- Vascular effects
  - improves peripheral and central blood flow
  - reduces blood viscosity, increases RBC deformability
  - antagonizes thromboxane induced vasoconstriction, which has been implicated in Raynauds phenomenom
- Antioxidant effect equivalent to ascorbic acid, glutathione or alpha-tocopherol

Ginkgo Biloba - side effects

• may increase bleeding particularly for those on anticoagulants / antithrombotics
• spontaneous hyphaema reported
Eyebright

- A herbal tablet often mixed with other components
- “Antiseptic, shrinks and soothes inflamed tissues, relieves pain”
- No plausible role in glaucoma or other eye diseases
Bilberry - Huckleberry

- Anthocyanosides used in rhodopsin
- Vit A, Vit C, antioxidants
- Vasodilator and anticoagulant
- For cataract, glaucoma, angina, diabetes, stroke, varicose veins
- “Should be on anyone’s list of herbs for aging”
- No verifiable role for these conditions
Herbal Eyewashes

- Contain: Golden Seal Root, Bayberry Root, Eyebright, Red Raspberry Leaves

- “We have used it in the clinic for eye problems for 7 years now with wonderful results”
AMD and the AREDS studies

• First study published in 2001.
• AREDS 2 published in 2013.
In 2001 the results of a 10 year study was published investigating the usefulness of antioxidants in preventing the progression of AMD; the AREDS formulation.

- Carotene
- Zinc
- Copper
- Vitamin C
- Vitamin E
Participants were stratified with either mild, moderate and advanced forms of AMD.
No therapeutic benefit for mild AMD, moderate and advanced forms of AMD experienced a 20% decrease in rate of progression.
In May 2013 AREDS study group published 2 papers on prevention of progression of cataract and AMD.
NEI sponsored a 5 yr study in 2006 to explore if the original AREDS formulation could be improved by the addition of:

- Lutein and zeaxanthin
- Omega-3 fatty acids
- Reduction of zinc
- Removal of carotene.
NEI sponsored a 5 yr study in 2006 to explore if the original AREDS formulation could be improved by the addition of:

- Lutein and zeaxanthin ✔
- Omega-3 fatty acids ✗
- Reduction of zinc ✔
- Removal of carotene. ✔
The brew approximates Lutein (10 mg) and zeaxanthin (2 mg), Low dose zinc 25 mg.

And

- Vitamin C (500 mg),
- Vitamin E (400 international units),
- Copper (2 mg as cupric oxide)
So my answer for complementary medicines and their usage.

- Admit not competent to give an opinion
- Advise patient to seek expert opinion
- As a general rule I don’t have a problem if patients want to try complementary treatments.