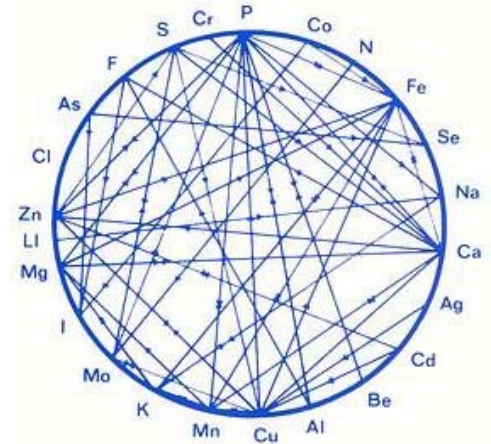


# PASCAS CARE

## The MINERAL MATRIX



**“Peace And Spirit Creating Alternative Solutions”**

**PASCAS FOUNDATION (Aust) Ltd**  
**ABN 23 133 271 593**

**Queensland, Australia**

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**www.pascasworldcare.com www.pascashealth.com**

**Em: [info@pascasworldcare.com](mailto:info@pascasworldcare.com)**

**Em: [info@pascashealth.com](mailto:info@pascashealth.com)**

## PASCAS INTRODUCTION:

Documents assembled by Pascas are provided for your individual assessment and exploration. The contents are sourced from a variety of avenues and publications. Every endeavour is made to determine that the contents are of the highest level of truth and veracity. At all times we ask that you go within yourself, to ascertain for yourself, how the contents resonate with you.

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Kinesiological muscle testing, as developed by Dr David R Hawkins and quantified by his Map of Consciousness (MOC) table, has been used to ascertain the possible level of truth of documents. Such tested calibration levels appear within the document. We ask that you consider testing same for yourself. The technique and process is outlined within Pascas documents, such as Pascas Health – Energy Level of Food. From each person’s perspective, results may vary somewhat. The calibration is offered as a guide only and just another tool to assist in considering the possibilities. As a contrast, consider using this technique to test the level of truth of your local daily newspaper.

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We offer all contents in love and with the fullness of grace, which is intended to flow to readers who join us upon this fascinating journey throughout this incredible changing era we are all experiencing.

Living Feelings First, *John.*



***“Never can one man do more for another man than by making it known of the availability of the Feeling Healing process and Divine Love.” JD***

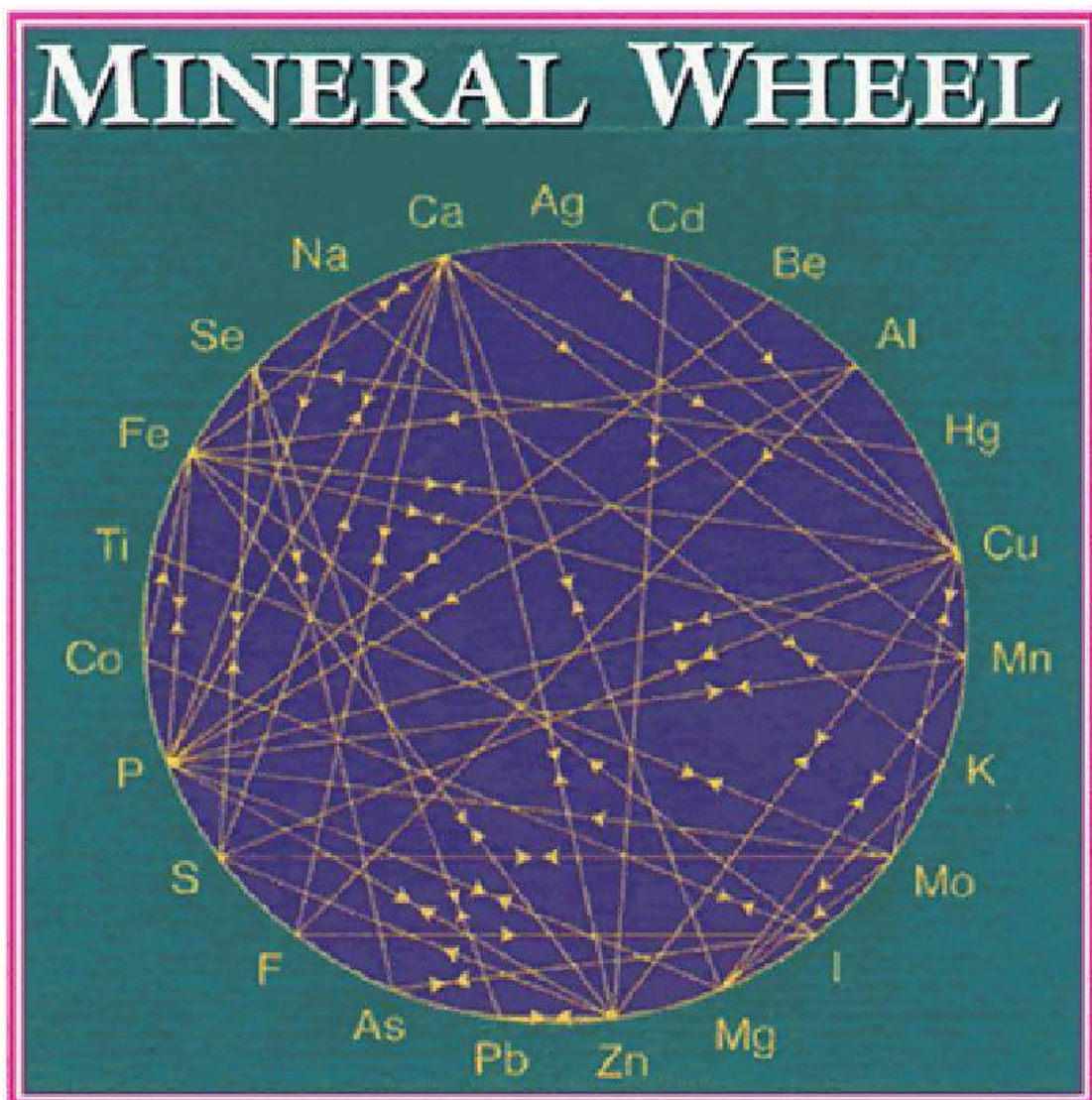
## PASCAS CARE – The MINERAL MATRIX

### MINERAL WHEEL

All diseases can be traced back to a lack of specific minerals. Minerals are the conveyors of nutrient.

*“You can trace every sickness, every disease, every ailment to mineral deficiency.”*

A circular representation originally developed by scientists, Ashmead, Graff and Ashmead in 1985 explaining the chemical interrelationships between minerals in the human body.



Coral calcium contains every mineral required by your body and it has them in approximately the same balance as your body. The mineral wheel illustrates the interactions between minerals. You can see by the arrows coming from Calcium (Ca) that it has interactions with 8 minerals who in turn each have

chemical activity with several other minerals and so on. Your cellular functions rely on this synergistic mineral balance.

### Mineral Elements

<b>Ag</b>	- Silver
<b>Al</b>	- Aluminum
<b>As</b>	- Arsenic
<b>Be</b>	- Beryllium
<b>Ca</b>	- Calcium
<b>Cd</b>	- Cadmium
<b>Co</b>	- Cobalt
<b>Cu</b>	- Copper
<b>F</b>	- Fluorine
<b>Fe</b>	- Iron
<b>Hg</b>	- Mercury
<b>I</b>	- Iodine
<b>K</b>	- Potassium
<b>Mg</b>	- Magnesium
<b>Mn</b>	- Manganese
<b>Mo</b>	- Molybdenum
<b>Na</b>	- Sodium
<b>P</b>	- Phosphorus
<b>Pb</b>	- Lead
<b>S</b>	- Sulfur
<b>Se</b>	- Selenium
<b>Ti</b>	- Thallium
<b>Zn</b>	- Zinc



*Every mineral is dependent on another to work. An excess of one mineral may inhibit or catalyse the chemical activity of the opposing mineral. This "mineral interference" is critical to bringing about chemical balance in the cell.*



# Periodic Table of the Elements

1 New Original	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A	15A	16A	17A	18A
1 H Hydrogen 1.00784	2 He Helium 4.002602	3 Li Lithium 6.941	4 Be Beryllium 9.012182	5 B Boron 10.811	6 C Carbon 12.0107	7 N Nitrogen 14.00674	8 O Oxygen 15.9994	9 F Fluorine 18.9984032	10 Ne Neon 20.1797	11 Na Sodium 22.989770	12 Mg Magnesium 24.3050	13 Al Aluminum 26.981538	14 Si Silicon 28.0855	15 P Phosphorus 30.973761	16 S Sulfur 32.065	17 Cl Chlorine 35.453	18 Ar Argon 39.948
19 K Potassium 39.0983	20 Ca Calcium 40.078	21 Sc Scandium 44.955910	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.938049	26 Fe Iron 55.8457	27 Co Cobalt 58.933200	28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.409	31 Ga Gallium 69.723	32 Ge Germanium 72.64	33 As Arsenic 74.92160	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.798
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.90585	40 Zr Zirconium 91.224	41 Nb Niobium 92.90638	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.90550	46 Pd Palladium 106.42	47 Ag Silver 107.8662	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.60	53 I Iodine 126.90447	54 Xe Xenon 131.293
55 Cs Cesium 132.90545	56 Ba Barium 137.327	57 to 71 Lanthanum series	72 Hf Hafnium 178.48	73 Ta Tantalum 180.9479	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.222	78 Pt Platinum 195.078	79 Au Gold 196.96655	80 Hg Mercury 200.59	81 Tl Thallium 204.3833	82 Pb Lead 207.2	83 Bi Bismuth 208.98038	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium (226)	89 to 103 Actinide series	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (271)	111 Rg Roentgenium (272)	112 Uub Ununbium (285)	113 Uut Ununtrium (284)	114 Uuq Ununquadium (289)	115 Uup Ununpentium (288)	116 Uuh Ununhexium (292)	117 Uuq Ununseptium (293)	118 Uuo Ununoctium

Atomic masses in parentheses are those of the most stable or common isotope.

57 La Lanthanum 138.9055	58 Ce Cerium 140.116	59 Pr Praseodymium 140.90765	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.92534	66 Dy Dysprosium 162.500	67 Ho Holmium 164.93032	68 Er Erbium 167.259	69 Tm Thulium 168.93421	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967	103 Lr Lawrencium (262)
89 Ac Actinium (227)	90 Th Thorium 232.0381	91 Pa Protactinium 231.03688	92 U Uranium 238.02891	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)	

Note: The subgroup numbers 1-18 were adopted in 1984 by the International Union of Pure and Applied Chemistry. The names of elements 112-118 are the Latin equivalents of those numbers.



## Diakyne Blood Tests determines Mineral levels so that nutrition and vitamin regimes can be rationalised with accuracy

<b>Mineral Chart</b>		
<b>All The Vitamins and Minerals Our Bodies Need</b>		
Nutrient	Suggested	Function
Boron	Toxic at 1 gram – no RDA	Bone health
Calcium	DRI 1,000 – 1,300 mg to 2.5 grams	Health of bones, teeth, muscles, regular heartbeat, and nerve function
Chromium	Tolerable intake 200 – 400 mcg	Metabolizes insulin
Copper	Tolerable intake up to 2 mg	Aids in iron absorption. synthesizes hemoglobin, produces energy
Flouride	DRI 3.1 mg – 10 mg	Health of bones and teeth
Iodine	RDA 150 mcg	Necessary fro thyroid hormone
Iron	RDA 15 mg	Formation of red blood cells.
Magnesium	RDA 320 mg – 350 mg	Aids muscle function, supports teeth and cardiovascular system
Manganese	Upper level intake to 2 mg	Formation of bones and collagen, metabolizes carbohydrates, synthesizes fatty acids and protein
Molybdenum	Upper level intake 10-25 mcg, upper levels to 50 mcg	Metabolisizes iron, works with enzymes
Phosphorous	RDA 800 mg DRI 700 mg	Health of bones and teeth. Works with enzymes
Potassium	Upper level intake 200 mg	Balance of fluids. Supports function of nerves, metabolizes protien and carbohydrates. Aids in muscle contraction
Selenium	RDA 55 mcg	Antioxidant, prevents damage to cells
Vanadium	Upper level intake to mcg	Metabolizes cholesterol and blood sugar. Possibly works with hormones
Zinc	RDA 12 mg	Utilized in conjunction with enzymes. Contributes to health of immune and reproductive systems

## Vitamin Chart

### All The Vitamins and Minerals Our Bodies Need

Nutrient	Suggested	Function	Toxicity/Issues
Vitamin A (retinol)	RDA 1,000 mcg or 5,000 IU	Maintains and promotes growth of tissue, bones, and teeth. Important for mucous membranes and vision	Intake of over 2,500 IU daily may cause birth defects
Vitamin A (beta carotene)	No RDA set	Antioxidant, protects against cancer	Non toxic
Vitamin B1 (thiamin)	RDA 1.1 mg	Supports growth, muscles, and nerve function. Necessary for utilization of carbohydrates	Some toxicity concerns
Vitamin B2 (riboflavin)	RDA 1.3 mg	Needed to metabolize amino and fatty acids. Formation of red blood cells and antibodies	Some toxicity concerns
Vitamin B6 (pyridoxine)	RDA 1.6 mg	Forms antibodies, synthesizes hormones. Metabolizes protein	Over 500 mg daily can damage nervous system
Vitamin B12	RDA 2 mcg	Metabolizes protein, carbohydrates and fats. Maintains nervous system and formulates blood cells	Gastrointestinal illness impairs absorption
Biotin	No RDA DRI 30 mcg	Metabolizes fats, carbohydrates, and protein.	Non toxic
Vitamin C	RDA 60 mg	Vital to strong immune system. Promotes healing of wounds. Antioxidant, maintains healthy blood vessels. Iron utilization	Gastrointestinal illness impairs absorption
Choline	No RDA DRI 10 – 100 mg	Builds neurotransmitters – part of brain function	Non toxic
Vitamin D	RDA 5 mcg, upper levels to 50 mcg	Sustains health of bones, proper utilization of calcium, created by exposure to sun.	Non toxic
Vitamin E (D-alpha tocopherol)	RDA 5 mcg	Antioxidant, maintains cell membranes. Protects lungs, liver, skin and breast tissue	Some toxicity concerns
Folic Acid	RDA 180 mcg DRI 400 mcg	Forms red blood cells and necessary for cell division. Used in digestion, metabolizes protein.	Non toxic
Vitamin K	RDA 65 mcg	Utilized for blood clotting and calcium binding.	Gastrointestinal illness impairs absorption
Niacin	RDA 15 mg DRI 14 mg	Aids in healthy cells, nervous system, skin, and digestive function.	Non toxic
Pantothenic Acid	DRI 5 mg	Helps synthesize fatty acids and cholesterol.	Non toxic



# The Importance of Minerals to Health

by David E Marsh

Before biological life was to emerge, to swim in the nurturing nutritious primordial broth, minerals had been around for a long, long time, having been born in the thermo-nuclear furnace of a star. In that sense, our bodies are made from particles of star dust. Apart from (perhaps) our DNA, they are the only part of our physical presence we can be sure of leaving behind: a few pounds of minerals and trace elements. (Trace elements are also minerals but present only in tiny particles and tiny amounts in our soil, water and food – sometimes only a fraction of a part per million.)

At a time when we have just begun to get our minds around the 43 or so “essential nutrients”, we are now informed there may be some 40 more: many of which, unless we were familiar with the list of the so called ‘periodic elements’, we barely knew existed. So, some 83 minerals!

The story of the trace element selenium illustrates the still unfolding mystery of the significance of minerals. Before 1957 selenium was not considered important in the diet. But now we know it’s essential. When genes replicate they are always producing incorrect copies of DNA. However, we have a ‘DNA correction unit’ which destroys inaccurately replicated DNA. This process involves a certain enzyme reaction which requires selenium in order to function. If there’s not enough selenium available, the unit shuts down and allows faulty DNA to be released into the system. Selenium deficiency is now linked with cancer (as are vitamins A, C, E, essential fatty acids, zinc and other minerals). Many soils in different parts of the world are deficient in selenium (Se).

There are said to be over 7,000 enzymic processes involved in body metabolism, many of them requiring minerals and trace elements.

This article is about why minerals are essential, where they are found and how they find their way into our bloodstream. In England and Wales today, statistically 8 out of 10 residents can expect to die of either heart disease or cancer, it is perhaps as good a time as any to consider the subject in some of its colourful detail.

When our tiny bit of broken-off star cooled, and water eventually covered the Earth, this primordial soup in which life first formed, was rich in minerals. When dry land appeared, and life emerged, the mineral and nutrient-rich environment provided the building blocks of life and helped power evolution. Much later, when animal life made its entrance, the soils were rich in minerals. Now after thousands of years of weathering, farming, cropping and grazing, most of the minerals have been removed and washed back to the oceans.

Two hundred years of industrial food refining has made the problem worse. What few minerals survive the above processes are often removed from the plate, not least through our practice of chopping and boiling food and discarding the water.

Three of the great nutritional pioneers of this century, Lady Eve Balfour, founder of the British Soil Association; the American dentist and researcher Weston Price,<sup>1</sup> and British medical research doctor Sir Robert McCarrison<sup>2,3</sup> all spoke at length about the importance of minerals, in soils and the food chain.

Today, the rapidly growing organic movement is happily beginning to get the attention it deserves. With roughly 7,000 industrial chemicals in regular use, the demand for unpolluted food and drink cannot be met. Less often mentioned by writers on organic produce is that it often contains more nutrients: vitamins, minerals and trace elements – without genetic modification. Well organically-manured soil provides the minerals and trace elements that plants can take up and use (they cannot make their own), rendering them stronger to fight disease. The ensuing food from such crops will, as McCarrison stated 60 years ago, be a more complete food for the humans and animals that eat it.

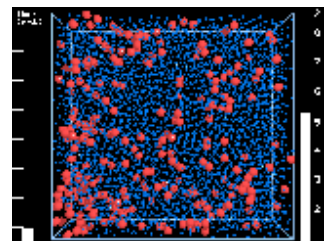
Livestock breeders understand cribbing, a disease that causes animals to chew the wooden doors or hayracks of their stalls. Pregnant ewes will lick clay, as human mums are sometimes known to eat coal, or children may lick paintwork. All these types of unusual behaviour are caused by a (subconscious) craving for the minerals that wood, coal, clay and paint contain. Farmers frequently put mineral salt licks in the fields for their animals: minerals also get added to their feed. Animals are therefore a good source of minerals (animal feed has often a better mineral spectrum than baby food). Vegetarians have to be more careful in food choice in this regard, or they will suffer from anaemia caused by iron deficiency, or any number of different mineral and trace mineral deficiencies.

Human mineral availability is being questioned following recent discoveries of deficiencies connected with cancer, certain types of heart disorder and cystic fibrosis. Deficiencies are seen most often in bone problems such as arthritis and osteoporosis. Examples can be seen in older people losing several inches of height as calcium is leached out of the bones; either: (i) through not getting enough calcium in the diet; (ii) ingesting it in unassimilable forms; (iii) not having the other minerals (including magnesium, selenium, boron, actinium) and vitamins (e.g. vitamin D) necessary for its healthy uptake and metabolism; (iv) adverse drug effects; or (v) a diet too high in salt, fibre or protein.

A current leader in the mineral field, possibly the most vociferous, and certainly the most academically stimulating, is a highly qualified veterinary surgeon of thirty years practice, who re-qualified as a doctor of naturopathic medicine, which he practised for ten years. Dr Joel Wallach's veterinary work included the discovery of selenium deficiency heralding the onset of cystic fibrosis in animals. He went on to propose a model for the onset of cystic fibrosis in humans. It was for this work he was nominated for the Nobel Prize in medicine in 1991.<sup>4</sup> Wallach is a latter day Gayelord Hauser, having the additional benefit of decades of scientific training and experience in agriculture, veterinary and human medicine.

Wallach is now a nutritional consultant, lecturing worldwide, addressing some 300 audiences annually, in addition to having his own weekly radio programme in Palm Springs, California. His scientific papers, books and collaborations with his Chinese surgeon wife Ma Lan<sup>5</sup> will put most learned commentators at ease. His somewhat combative approach may not suit everyone, but he can be seen as coming directly from the stables of Balfour, McCarrison and Weston Price.

Plant, or colloidal minerals (colloidal refers to size – with a diameter of less than 0.0002 cm) are small enough to be absorbed into our digestive system.



Minerals are often present in food in larger particles, particularly in pill type supplements, but many of these cannot be absorbed.

Current debate centres on:

- (i) How many of the 78 known minerals are essential to human health and maintenance (60 have been found in human blood and are known to be needed in the diet on a regular basis);
- (ii) What is the best way to get them on a regular basis, and
- (iii) In what form.

So first, what's essential? A hundred years ago the body was believed to consist of 14 elements, ten of them minerals: phosphorus, sulphur, calcium, magnesium, sodium, potassium, chloride, fluorine, silicon and iron.

By 1950 copper, manganese, zinc and cobalt were found to be essential, followed shortly by molybdenum, then selenium (1957). 1975 saw the inclusion of fluorine and silicon (after they had been deleted from earlier lists); boron followed a few years later.

In 1962 new guidelines were established re-defining 'essentiality'. These placed elements in to the following four categories:

- (i) Main (or constituent);
- (ii) Integrating (essential);
- (iii) Facultative (partly essential or beneficial);
- (iv) Indifferent (or negative).

Under this new classification, previously unresearched elements are now being examined. This has already resulted in the discovery that depletion of trace elements can occur both in embryonic development and post-natal periods. Deficiencies of trace elements in sucklers were discovered in animals being suckled by mothers running trace element deficiencies. Human milk contains 60 trace elements including aluminium, bromine, vanadium and nickel, which were previously considered unimportant.

So the list grows. Professor GN Schrauzer<sup>6</sup> admits that 'since the number of essential or beneficial trace elements may be much larger than is presently assumed, the claim that we need 90 nutrients for health can be rationalised'.

There are many different ways in which minerals and trace elements can be obtained. Traditional fish and seaweed eating cultures such as the Japanese would get their supplies from their diet. Mountain dwellers obtain their minerals from water and food. Organic gardeners obtain theirs through using good organic manure such as seaweed manure, leaf mould, ground volcanic rock, etc.

Mineral baths and spas, with highly mineralised water, were once widely used as mineral sources in Europe. How many cures at Lourdes may have stemmed not just from faith alone, but by the mineralised water drunk by pilgrims there, containing micro-nutrients their bodies may have been starved of for decades?

Many people today rely on supplements, in pills, powders or liquids. Sources include ready made drinks, as in organic vegetable and fruit juice. Seaweeds; blue/green algae such as chlorella and spirulina, and rigorously tested aphanizomenon flos aquae are also good sources of many trace elements.

Vitamin and mineral supplements have now become a big industry (on which the pharmaceutical giants have their sights). Yet speculation continues concerning the bioavailability and absorption of some of the varied preparations now on the market.

In a recent article Prof. GN Schrauzer<sup>7</sup> explains how “bioavailability has been defined as ‘the proportion of the nutrient in food that can be absorbed for use and storage; absorption as the physiological processes which facilitates transport of nutrients from the intestinal lumen to the body fluids and tissues’<sup>8</sup>”.

Schrauzer continues: “Since bioavailability is a prerequisite of absorption, solid supplements must be soluble in the stomach fluid. Most supplements are formulated to meet this requirement, but along with their increasing complexity, this is difficult to achieve.

“In liquid supplements, vitamins and minerals are already dissolved and thus immediately bioavailable. The liquid supplements usually are also acidic; specifically, they are formulated to contain citric acid, ascorbic acid and other substances which increase bioavailability of minerals, i.e. carbohydrates (glucose, lactose), amino acids (arginine, lysine, etc) vegetable gum, peptides; emulsifying agents. Solid vitamin-mineral preparations instead contain inert excipients and are usually buffered so as not to cause gastric discomfort on ingestion, although this may reduce mineral bioavailability.”

Schrauzer goes on to describe how “**active transport systems have evolved to ensure absorption of minerals and vitamins; some require specific carrier proteins and co-factors**”<sup>9</sup> “Carrier proteins,” he explains, “**are often highly specific; but in the case of metals, the same carrier can bind several different metals with similar ionic radii and charges**” (when a molecule or atom becomes electrically charged, it is known as an ion). He describes how “**absorption occurs mainly by diffusion and is a non energy-dependent process; the driving force is the concentration difference of the ion between the two sides of the membrane**”<sup>9</sup>.

This may interest researchers of biomagnetic medicine, whose attention has been focused on treatments for cancer, in association with nutritional medicine. It is easy to forget that electricity has been used for less than a century. **As all nutrients are transported within the body as ions, on electrical circuits, our domestic and work-place electromagnetic environments (EME) could be significant. For EME may be a co-factor, more deeply involved in our contemporary plague of cancers than is realised.** Rates of oesophagus, colon and rectal cancer are currently increasing.<sup>10</sup>

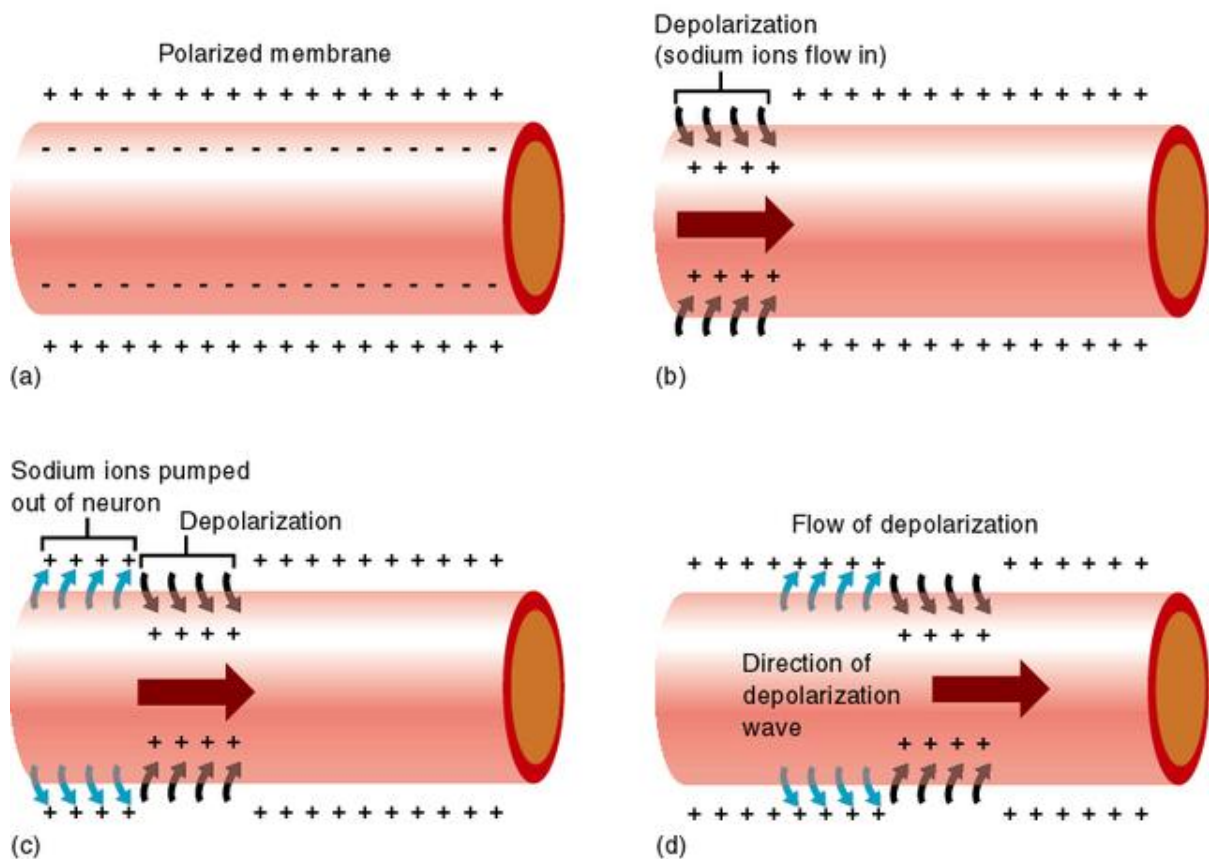
The widespread use of electricity affects our living environment in so many ways today that we ignore this at our peril. Ring-wiring in houses, electrical gadgets such as televisions, computers, microwave ovens, electric blankets and mobile telephones, to take but a few examples, all affect our immediate electromagnetic environment and possibly the ionic charges of our cells.

In the late 18th century, the Société Royale de Médecine in Paris oversaw scrupulous research into medical aspects of magnetism. This was the society which condemned Mesmer’s concept of animal

magnetism (and rejected him as a member). **They concluded in 1777 after three years' research that 'the magnet will one day play as important a role in medicine as it does in physics'.** Two hundred and twenty odd years later it looks increasingly as if the wheel will turn full circle.<sup>11</sup>

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		NUTRITIONAL ELEMENTS																					
		Boron	Calcium	Chromium	Cobalt	Copper	Germanium	Iron	Lithium	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silicon	Sodium	Strontium	Tin	Vanadium	Zinc	
NUTRITIONAL ELEMENTS	Boron	○	●						●													●	
	Calcium	●	○	●		●		●	●	●				●			●		●			●	
	Chromium		●	○							●											●	●
	Cobalt				○			●															●
	Copper		●			○		●			●	●	●	●		●							●
	Germanium						○																●
	Iron		●		●	●		○		●	●		●	●	●	●							●
	Lithium								○										●				
	Magnesium	●	●					●		○	●			●	●					●			
	Manganese		●	●		●		●		●	○			●									●
	Molybdenum					●						○		●			●						●
	Nickel					●		●					○										●
	Phosphorus		●			●		●		●	●	●		○									●
	Potassium							●		●					○				●				
	Selenium					●		●								○							●
	Silicon		●									●					○						●
	Sodium								●						●				○				
	Strontium		●							●										○			●
	Tin																				○		●
Vanadium			●																		○		
Zinc	●	●	●	●	●	●	●			●	●	●	●		●	●		●	●			○	

**LEGEND:**

- Interaction
- No Interaction

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## INSIGHTS on NUTRIENT TRAFFIC in LIVING CELLS:

[http://en.wikinews.org/wiki/Insights\\_on\\_nutrient\\_traffic\\_in\\_living\\_cells](http://en.wikinews.org/wiki/Insights_on_nutrient_traffic_in_living_cells)

September 22, 2005

In a new study that may have important applications in medicine, researchers from the University of California Santa Barbara found that cells have evolved a surprising, but efficient, way to regulate the transport of goods to the nucleus and surrounding organelles.

Nutrients and signals outside of a cell get to the cell nucleus by way of carriers called endosomes. Endosomes travel through a cell on a highway of structural supports called microtubules.

Researchers studied the motion of endosomes by putting florescent tags, which glow under certain types of light, on individual endosomes and recording their motion through a microscope. They found that endosomes do not travel straight to the nucleus. Instead, they randomly travel toward and away from the nucleus with no preferred direction.

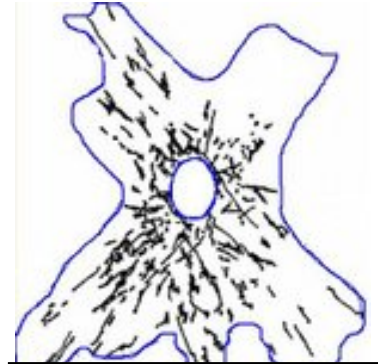
This is a little like getting in the car to drive to work, but instead of being caught in heavy traffic along the main road, randomly choosing a back road to follow. If you end up being caught in traffic going that way, you can also turn around and travel in the opposite direction for a while. It would make getting to work a little slow, but it leads to an even distribution of endosomes all along the microtubules.

This finding surprised the Santa Barbara group. Endosomes are most concentrated around the nucleus of a cell, so researchers expected that the endosomes would usually travel toward the nucleus.

Computer simulations show that the starburst-shaped layout of the microtubule system is responsible for the high concentration of endosomes at the nucleus. "It's all in the geometry of the cell," said Samir Mitragotri, a researcher on the project.

Endosomes randomly travel toward or away from the nucleus and can change direction. But as in Italy where all roads lead to Rome, the endosomes get to their destination because all roads eventually pass the nucleus. This system does not get a particular endosome to its target as quickly as possible, but ensures that nutrient transport is not disrupted if the cell moves or there is increased traffic.

Some heart, neurological, and muscular diseases are caused by the break down of proteins that regulate endosome movement. Scientists are not sure what this does to the cell said Samir Mitragotri, a co-author of the study, but research like this could help them discover the **"missing link" between disease and transport properties.**



The distribution of nutrient carriers within a cell, overlaid on a diagram of the starburst-shaped microtubules that act as the cell's highways.

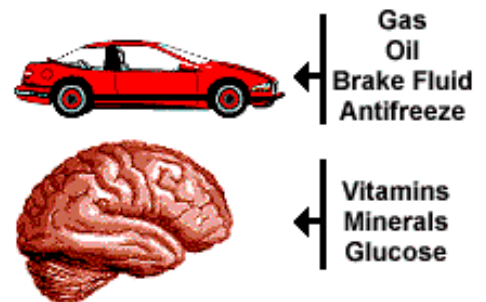
# Nutrition and the Brain



<http://faculty.washington.edu/chudler/nutr.html>

Your brain is like a car. A car needs gasoline, oil, brake fluid and other materials to run properly. Your brain also needs special materials to run properly: glucose, vitamins, minerals and other essential chemicals. For example, the fuel (energy) for your brain is glucose. You can get glucose by eating carbohydrates or other foods that can be converted to glucose.

Your brain must manufacture the right proteins and fats to do things such as grow new connections or add myelin, the fatty sheath to axons. You do this by digesting proteins and fats in food and using the pieces, that is, the amino acids and fatty acids, to make the new brain proteins and fats. Without the correct amount and balance of particular building blocks, your brain will not work properly. Too little (deficiency) or too much (overabundance) of the necessary nutrient can affect the nervous system. (For a table that shows the effects of too little or too much of specific nutrients, please see [Nutrient Effects on the Nervous System](#).)



## Vocabulary

**Amino Acid:** Building block of proteins; an organic compound.

**Essential Vitamin or Mineral:** Vitamins and minerals that are needed by the body but are not produced by the body. Therefore, these materials must be taken in as part of the diet.

**Lipids (fats):** Not all fats are bad for you. In fact, some fats are essential for proper brain function. Two lipids important to the brain are the n-6 and n-3 fatty acids. Low levels of n-3 fatty acids in a diet can cause visual problems especially by affecting the retina. Studies in animals have shown that diets without n-3 fatty acids cause learning, motivation and motor problems and may affect systems that use the neurotransmitters dopamine and serotonin in the frontal cortex. The n-6 fatty acids are also important in proper brain function because they affect neurotransmitter release and they also influence the ability of neurons to use glucose.



**Protein:** A large molecule made from amino acids. Examples of proteins are enzymes and hormones.

**Vitamin:** Substance from food that is necessary for the proper function of the body. Many vitamins assist in enzymatic processes.



## Diet and the Neurotransmitters

Certain foods contain precursors (starting materials) for some neurotransmitters. If a diet is deficient in certain precursors, the brain will not be able to produce some neurotransmitters. Neurological and mental disorders may occur when the balance of neurotransmitters is upset. Examples of neurotransmitter precursors include:

### Aspartic Acid

Used to make aspartate; found in peanuts, potatoes, eggs and grains.

### Choline

Used to make acetylcholine; found in eggs, liver and soybeans.

### Glutamic Acid

Used to make glutamate; found in flour and potatoes.

### Phenylalanine

Used to make dopamine; found in beets, soybeans, almonds, eggs, meat and grains.

### Tryptophan

Used to make serotonin; found in eggs, meat, skim milk, bananas, yogurt, milk, and cheese.

### Tyrosine

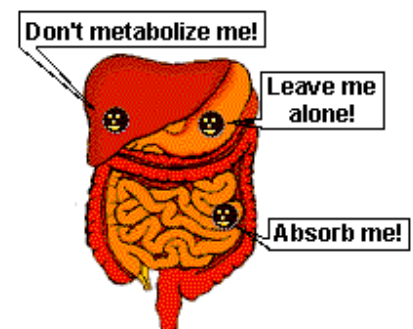
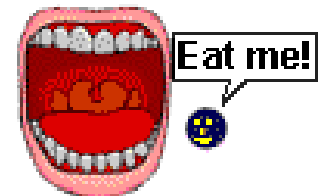
Used to make norepinephrine; found in milk, meat, fish and legumes.



## The Journey into the Brain

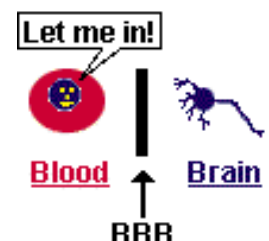
Nutrients must follow a tricky pathway to your brain and overcome several challenges:

1. They must gain entry to your body: if you don't eat them, they will not be available to your brain.
2. Once in your stomach, they must survive an attack by acid that breaks some foods down.
3. Further along the digestive tract, they must be absorbed through the cells lining the intestine and transported through blood vessel walls into the bloodstream.
4. Travelling in the blood through the liver, nutrients need to avoid being metabolized (destroyed).
5. Once in the bloodstream, nutrients must cross small blood vessels into brain tissue. This transport from the blood to neurons is restricted by the blood brain barrier.



## The Blood Brain Barrier (BBB)

The blood brain barrier (BBB) keeps many substances out of the brain, but it also must let nutrients into the brain. You might think of the BBB as a wall between



the bloodstream and neurons. A substance must cross through this wall from the blood to reach neurons. The BBB can be crossed in three ways:

1. Some materials can fit through "holes" in the BBB.
2. Substances can be transported through the BBB by special carriers.
3. Some materials can break down the BBB.

## Malnutrition and the Brain

Vitamin and mineral deficiencies can be caused by:

1. Starvation
2. Poor diet
3. Poor absorption of vitamins and minerals
4. Damage to the digestive system
5. Infection
6. Alcoholism



The brain of a human foetus grows rapidly from the 10th to 18th week of pregnancy, so it is important for the mother to eat nutritious foods during this time. The brain also grows rapidly just before and for about 2 years after birth. Malnutrition during these periods of rapid brain growth may have devastating effects on the nervous system and can affect not only neurons, but also glial cell development and growth. Effects on glial cells may change myelin development especially because myelin continues to form around axons for several years after birth.

Babies born to mothers who had poor diets may have some form of mental retardation or behavioural problems. Also, children who do not receive adequate nutrition in their first few years of life may develop problems later. Often the effects of malnutrition and environmental problems, such as emotional and physical abuse, can combine to create behavioural problems. Therefore, the exact causes of behavioural disorders are difficult to determine.



Some effects of malnutrition can be repaired by a proper diet, so not all of the effects of poor diets are permanent. Researchers believe that the timing of malnutrition is an important factor in determining if problems will occur. This means that missing out on a particular nutrient at the time when a part of the brain is growing and needs that nutrient will cause a specific problem there.

## Studying the Nutrition-Brain-Behaviour Connection

The study of how nutrition affects the brain and behaviour is relatively new. Scientists have just begun to understand how changes in particular nutrients alter the brain and how these neural changes then affect intelligence, mood, and the way people act. Experiments that investigate this nutrition-brain-behaviour interaction, particularly those that study the effects of malnutrition, are difficult for several reasons:



1. There is a link between poor nutrition and environmental factors. Therefore, changes in behaviour may not be due to poor nutrition only. Other factors such as education, social or family problems may affect behaviour.
2. It is difficult to alter only one substance in the human diet. Therefore, it is difficult to determine if a particular vitamin or mineral has a certain effect on behaviour. For ethical reasons, experiments in which a person is not allowed to eat a particular nutrient cannot be done, so much of the data come from animal experiments. Studies in humans are generally limited to examining the effects of famine and starvation, situations where many nutrients are missing.
3. People respond to different diets in different ways. In other words, there is a large individual variation in the body's response and need for different nutrients.
4. A change in diet may have a **placebo effect**. The placebo effect occurs because a person **thinks** something will have an effect. In other words, if a person thinks a change in diet will affect behaviour, it may actually affect behaviour even if the nutrients are not causing the change. Therefore, experiments must have a placebo control and be performed in a **double-blind manner** where neither the experimental subject nor the experimenter know who has received an altered diet.
5. The definition of intelligence is controversial. For example, some people do not believe that IQ tests accurately measure intelligence so it is difficult to use an IQ test to claim that intelligence has been affected by diet.

**WARNING:** Always consult with a health care professional before starting a diet or nutritional supplement program, such as taking high doses of vitamins or minerals. Small changes in diet can have large effects on your health.



**PASCAS  
HEALTH**



**Feeling  
Healing with  
Divine Love is  
the key!**



## Whole Food Signatures

<http://www.dontolmaninternational.com>

A stupendous insight of civilisations past has now been confirmed by today's investigative, nutritional sciences. They have shown that what was once called "**The Doctrine of Signatures**" was astoundingly correct.

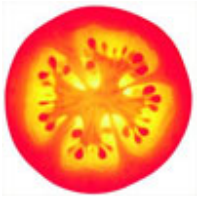
Referred to in the classical period of Rome as the "Law of Similarities" it is now called by scientists, "**Teleological Nutritional Targeting**".

It now contends that every whole food has a pattern that resembles a body organ or physiological function and that this pattern acts as a signal or sign as to the benefit the food provides the eater.

For instance, Don Tolman notes:



A sliced **Carrot** looks like the human eye. The pupil, iris and radiating lines look just like the human eye...and YES science now shows that carrots greatly enhance blood flow to and function of the eyes.



A **Tomato** has four chambers and is red. The heart is red and has four chambers. All of the research shows tomatoes are indeed pure heart and blood food.



**Grapes** hang in a cluster that has the shape of the heart. Each grape looks like a blood cell and all of the research today shows that grapes are also profound heart and blood vitalizing food.



A **Walnut** looks like a little brain, a left and right hemisphere, upper cerebrums and lower cerebellums. Even the wrinkles or folds are on the nut just like the neo-cortex. We now know that walnuts help develop over 3 dozen neuro-transmitters for brain function.



**Kidney Beans** actually heal and help maintain kidney function and yes, they look exactly like the human kidneys.



**Celery, Bok Choy, Rhubarb** and more look just like bones. These foods specifically target bone strength. Bones are 23% sodium and these foods are 23% sodium. If you don't have enough sodium in your diet the body pulls it from the bones, making them weak. These foods replenish the skeletal needs of the body.



**Egg Plant, Avocadoes and Pears** target the health and function of the womb and cervix of the female – they look just like these organs. Today's research shows that when a woman eats 1 avocado a week, it balances hormones, sheds unwanted birth weight and prevents cervical cancers. And how profound is this? .... it takes **exactly 9 months** to grow an Avocado from blossom to ripened fruit. There are over 14,000 photolytic chemical constituents of nutrition in each one of these foods (modern science has only studied and named about 141 of them).



**Figs** are full of seeds and hang in twos when they grow. Figs increase the motility of male sperm and increase the numbers of sperm as well to overcome male sterility.



**Sweet Potatoes** look like the pancreas and actually balance the glycemic index of diabetics.



**Olives** assist the health and function of the ovaries



**Grapefruits, Oranges,** and other **Citrus fruits** look just like the mammary glands of the female and actually assist the health of the breasts and the movement of lymph in and out of the breasts.



**Onions** look like body cells. Today's research shows that onions help clear waste materials from all of the body cells. They even produce tears which wash the epithelial layers of the eyes



**Bananas, Cucumber, Zucchini** and more target the size and strength of the male sexual organ. It's true!



**Peanuts** have a profound effect on the testicles and sexual libido. Peanuts were banned as a food for males by the church during the middle ages. Most people don't realize that arginine, the main component of Viagra, comes from peanuts.



## Mineral Primer

As the remarkable properties of vitamins have revealed themselves to investigators, so too have those of the various minerals in our food and water. The seven macro-minerals— calcium, chloride, magnesium, phosphorus, potassium, sodium and sulphur—now share the research spotlight with a longer list of essential trace minerals. These are needed only in minute amounts, but their absence results in many disease conditions. The number of trace minerals known to be essential to life now exceeds thirty, and some researchers believe that for optimum health we need to take in every substance found in the Earth's crust. Along with familiar trace minerals, such as iron and iodine, the body also needs others less well known, like cobalt, germanium and boron.

Mankind ingests minerals in a number of different forms. He can take them in as salts; that is, as molecules in which a negatively charged atom is bonded ionically to a positively charged atom as in common table salt (sodium chloride) or less well-known salts such as magnesium chloride, calcium phosphate or zinc sulfate. In water and other liquids, these form a solution as the salts dissolve into positively and negatively charged mineral ions.

Minerals are also ingested as integral parts of the foods we eat, in which case the minerals are held ionically in a claw-like way or "chelated" by a large molecule. Examples include chlorophyll (which chelates a magnesium atom), haemoglobin (which chelates an iron atom) and enzymes that chelate copper, iron, zinc and manganese.

Minerals are usually absorbed in ionic form. If they are not in ionic form when consumed, they are ionized in the gut, with salts dissolving into their two components or chelates releasing their key elements. The system by which mineral ions are then absorbed is truly remarkable. If, for example, the body needs calcium, the parathyroid gland will send a signal to the intestinal wall to form a calcium-binding protein. That calcium-binding protein will then pick up a free calcium ion, transport it through the intestinal mucosa and release it into the blood.<sup>1</sup> Manganese and magnesium have similar carriers and their absorption, retention and excretion is likewise governed by complex feedback mechanisms involving other nutrients and hormonal signals. Absorption and excretion of phosphorus is regulated in part by activity of the adrenal glands and vitamin D status.

There are a number of factors that can prevent the uptake of minerals, even when they are available in our food. The glandular system that regulates the messages sent to the intestinal mucosa require plentiful fat-soluble vitamins in the diet to work properly. Likewise, the intestinal mucosa requires fat-soluble vitamins and adequate dietary cholesterol to maintain proper integrity so that it passes only those nutrients the body needs, while at the same time keeping out toxins and large, undigested proteins that can cause allergic reactions. Minerals may "compete" for receptor sites. Excess calcium may impede the absorption of manganese, for example. Lack of hydrochloric acid in the stomach, an over-alkaline environment in the upper intestine or deficiencies in certain enzymes, vitamin C and other nutrients may prevent chelates from releasing their minerals. Finally, strong chelating substances, such as phytic acid in grains, oxalic acid in green leafy vegetables and tannins in tea may bind with ionized minerals in the digestive tract and prevent them from being absorbed.

Several types of mineral supplements are available commercially including chelated minerals, mineral salts, minerals dissolved in water and "colloidal" mineral preparations. A colloid is a dispersion of small

particles in another substance. Soap, for example, forms a colloidal dispersion in water; milk is a dispersion of colloidal fats and proteins in water, along with dissolved lactose and minerals. Colloidal mineral preparations presumably differ from true solutions in that the size of the dispersed particles is ten to one thousand times larger than ions dissolved in a liquid. Colloidal dispersions tend to be cloudy; or they will scatter light that passes through them. Shine a flashlight through water containing soap or a few drops of milk and its path can be clearly seen, even if the water seems clear.

There is no evidence that the body absorbs colloidal mineral preparations any better than true solutions of mineral salts or minerals in chelated form. Many so-called "colloidal" formulas often contain undesirable additives, including citric acid, that prevent the mineral particles from settling to the bottom of the container. Furthermore, these products may contain an abundance of minerals that can be toxic in large amounts, such as silver and aluminum. Even mineral preparations in which the minerals are in true solution may contain minerals in amounts that may be toxic. If a product tastes very bitter, it probably should be avoided.

Some commercial interests sell minerals chelated to amino acids which they claim do not break down in the gut, but which pass in their entirety through the mucosa and into the blood, thus bypassing certain blocks to mineral absorption. However, such products, if they work, bypass the body's exquisitely designed system for taking in just what it needs and may cause serious imbalances. Obviously, such formulations should be taken only under the supervision of an experienced health care practitioner.

The proper way to take in minerals is through mineral-rich water; through nutrient-dense foods and beverages; through mineral-rich bone broths in which all of the macro-minerals—sodium, chloride, calcium, magnesium, phosphorus, potassium and sulphur—are available in ready-to-use ionized form as a true electrolyte solution; through the use of unrefined sea salt; and by adding small amounts of fine clay or mud as a supplement to water or food, a practice found in many traditional societies throughout the world. Analysis of clays from Africa, Sardinia and California reveals that clay can provide a variety of macro- and trace minerals including calcium, phosphorus, magnesium, iron and zinc.<sup>2</sup> Clay also contains aluminum, but silicon, present in large amounts in all clays, prevents absorption of this toxic metal and actually helps the body eliminate aluminum that is bound in the tissues.<sup>3</sup>

When mixed with water, clay forms a temporary colloidal system in which fine particles are dispersed throughout the water. Eventually the particles settle to the bottom of the container, but a variety of mineral ions will remain in the water. These mineral ions are available for absorption, while other minerals that form an integral part of the clay particles may, in some circumstances, be available for absorption through ionic exchange at the point of contact with the intestinal villi.

Clay particles, defined as having a size less than 1-2 microns, have a very large surface area relative to their size. They carry a negative electric charge and can attract positively charged pathogenic organisms along with their toxins and carry them out of the body.<sup>4</sup> Thus, clay compounds not only provide minerals but also can be used as detoxifying agents. As such, they facilitate assimilation and can help prevent intestinal complaints, such as food poisoning and diarrhoea. They also will bind with anti-nutrients found in plant foods, such as bitter tannins, and prevent their absorption.

The seven **macro-minerals**, needed in relatively large amounts, are as follows:

**Calcium:** Not only vital for strong bones and teeth, calcium is also needed for the heart and nervous system and for muscle growth and contraction. Good calcium status prevents acid-alkaline imbalances in the blood. The best sources of usable calcium are dairy products and bone broth. In cultures where dairy products are not used, bone broth is essential. Calcium in meats, vegetables and grains is difficult to absorb. Both iron and zinc can inhibit calcium absorption as can excess phosphorus and magnesium. Phytic acid in the bran of grains that have not been soaked, fermented, sprouted or naturally leavened will bind with calcium and other minerals in the intestinal tract, making these minerals less available. Sufficient vitamin D is needed for calcium absorption as is a proper potassium/calcium ratio in the blood. Sugar consumption and stress both pull calcium from the bones.

**Chloride:** Chloride is widely distributed in the body in ionic form, in balance with sodium or potassium. It helps regulate the correct acid-alkaline balance in the blood and the passage of fluids across cell membranes. It is needed for the production of hydrochloric acid and hence for protein digestion. It also activates the production of amylase enzymes needed for carbohydrate digestion. Chloride is also essential to proper growth and functioning of the brain. The most important source of chloride is salt, as only traces are found in most other foods. Lacto-fermented beverages and bone broths both provide easily assimilated chloride. Other sources include celery and coconut.

**Magnesium:** This mineral is essential for enzyme activity, calcium and potassium uptake, nerve transmission, bone formation and metabolism of carbohydrates and minerals. It is magnesium, not calcium, that helps form hard tooth enamel, resistant to decay. Like calcium and chloride, magnesium also plays a role in regulating the acid-alkaline balance in the body. High magnesium levels in drinking water have been linked to resistance to heart disease. Although it is found in many foods, including dairy products, nuts, vegetables, fish, meat and seafood, deficiencies are common in America due to soil depletion, poor absorption and lack of minerals in drinking water. A diet high in carbohydrates, oxalic acid in foods like raw spinach and phytic acid found in whole grains can cause deficiencies. An excellent source of usable magnesium is beef, chicken or fish broth. High amounts of zinc and vitamin D increase magnesium requirements. Magnesium deficiency can result in coronary heart disease, chronic weight loss, obesity, fatigue, epilepsy and impaired brain function. Chocolate cravings are a sign of magnesium deficiency.

**Phosphorus:** The second most abundant mineral in the body, phosphorus is needed for bone growth, kidney function and cell growth. It also plays a role in maintaining the body's acid-alkaline balance. Phosphorus is found in many foods, but in order to be properly utilized, it must be in proper balance with magnesium and calcium in the blood. Excessive levels of phosphorus in the blood, often due to the consumption of soft drinks containing phosphoric acid, can lead to calcium loss and to cravings for sugar and alcohol; too little phosphorus inhibits calcium absorption and can lead to osteoporosis. Best sources are animal products, whole grains, legumes and nuts.

**Potassium:** Potassium and sodium work together—inner cell fluids are high in potassium while fluids outside the cell are high in sodium. Thus, potassium is important for many chemical reactions within the cells. Potassium is helpful in treating high blood pressure. It is found in a wide variety of nuts, grains and vegetables. Excessive use of salt along with inadequate intake of fruits and vegetables can result in a potassium deficiency.



**Sodium:** As all body fluids contain sodium, it can be said that sodium is essential to life. It is needed for many biochemical processes including water balance regulation, fluid distribution on either side of the cell walls, muscle contraction and expansion, nerve stimulation and acid-alkaline balance. Sodium is very important to the proper function of the adrenal glands. However, excessive sodium may result in high blood pressure, potassium deficiency, and liver, kidney and heart disease; symptoms of deficiency include confusion, low blood sugar, weakness, lethargy and heart palpitations. Meat broths and zucchini are excellent sources.

**Sulphur:** Part of the chemical structure of several amino acids, sulphur aids in many biochemical processes. It helps protect the body from infection, blocks the harmful effects of radiation and pollution and slows down the aging process. Sulphur-containing proteins are the building blocks of cell membranes, and sulphur is a major component of the gel-like connective tissue in cartilage and skin. Sulphur is found in cruciferous vegetables, eggs, milk and animal products.

Although needed in only minute amounts, **trace minerals** are essential for many biochemical processes. Often it is a single atom of a trace mineral, incorporated into a complex protein, that gives the compound its specific characteristic—iron as a part of the haemoglobin molecule, for example, or a trace mineral as the distinguishing component of a specific enzyme. The following list is not meant to be exhaustive but merely indicative of the complexity of bodily processes and their dependence on well-mineralized soil and food.

**Boron:** Needed for healthy bones, boron is found in fruits, especially apples, leafy green vegetables, nuts and grains.

**Chromium:** Essential for glucose metabolism, chromium is needed for blood sugar regulation as well as for the synthesis of cholesterol, fats and protein. Most Americans are deficient in chromium because they eat so many refined carbohydrates. Best sources are animal products, molasses, nuts, whole wheat, eggs and vegetables.

**Cobalt:** This mineral works with copper to promote assimilation of iron. A cobalt atom resides in the centre of the vitamin B12 molecule. As the best sources are animal products, cobalt deficiency occurs most frequently in vegetarians.

**Copper:** Needed for the formation of bone, hemoglobin and red blood cells, copper also promotes healthy nerves, a healthy immune system and collagen formation. Copper works in balance with zinc and vitamin C. Along with manganese, magnesium and iodine, copper plays an important role in memory and brain function. Nuts, molasses and oats contain copper but liver is the best and most easily assimilated source. Copper deficiency is widespread in America. Animal experiments indicate that copper deficiency combined with high fructose consumption has particularly deleterious effects on infants and growing children.

**Germanium:** A newcomer to the list of trace minerals, germanium is now considered to be essential to optimum health. Germanium-rich foods help combat rheumatoid arthritis, food allergies, fungal overgrowth, viral infections and cancer. Certain foods will concentrate germanium if it is found in the soil—garlic, ginseng, mushrooms, onions and the herbs aloe vera, comfrey and suma.

**Iodine:** Although needed in only minute amounts, iodine is essential for numerous biochemical processes, such as fat metabolism, thyroid function and the production of sex hormones. Muscle cramps are a sign of deficiency as are cold hands and feet, proneness to weight gain, poor memory, constipation, depression and headaches. It seems to be essential for mental development. Iodine deficiency has been linked to mental retardation, coronary heart disease, susceptibility to polio and breast cancer. Sources include most sea foods, unrefined sea salt, kelp and other sea weeds, fish broth, butter, pineapple, artichokes, asparagus and dark green vegetables. Certain vegetables, such as cabbage and spinach, can block iodine absorption when eaten raw or unfermented. Requirements for iodine vary widely. In general, those whose ancestors come from seacoast areas require more iodine than those whose ancestors come from inland regions. Proper iodine utilization requires sufficient levels of vitamin A, supplied by animal fats. In excess, iodine can be toxic. Consumption of high amounts of inorganic iodine (as in iodized salt or iodine-fortified bread) as well as of organic iodine (as in kelp) can cause thyroid problems similar to those of iodine deficiency, including goiter.<sup>5</sup>

**Iron:** As part of the hemoglobin molecule, iron is vital for healthy blood; iron also forms an essential part of many enzymes. Iron deficiency is associated with poor mental development and problems with the immune system. It is found in eggs, fish, liver, meat and green leafy vegetables. Iron from animal protein is more readily absorbed than iron from vegetable foods. The addition of fat-soluble vitamins found in butter and cod liver oil to the diet often results in an improvement in iron status. Recently, researchers have warned against inorganic iron used to supplement white flour. In this form, iron cannot be utilized by the body and its buildup in the blood and tissues is essentially a buildup of toxins. Elevated amounts of inorganic iron have been linked to heart disease and cancer.

**Manganese:** Needed for healthy nerves, a healthy immune system and blood sugar regulation, manganese also plays a part in the formation of mother's milk and in the growth of healthy bones. Deficiency may lead to trembling hands, seizures and lack of coordination. Excessive milk consumption may cause manganese deficiency as calcium can interfere with manganese absorption. Phosphorus antagonizes manganese as well. Best sources are nuts (especially pecans), seeds, whole grains and butterfat.

**Molybdenum:** This mineral is needed in small amounts for nitrogen metabolism, iron absorption, fat oxidation and normal cell function. Best sources are lentils, liver, grains, legumes and dark green leafy vegetables.

**Selenium:** A vital antioxidant, selenium acts with vitamin E to protect the immune system and maintain healthy heart function. It is needed for pancreatic function and tissue elasticity and has been shown to protect against radiation and toxic minerals. High levels of heart disease are associated with selenium-deficient soil in Finland and a tendency to fibrotic heart lesions is associated with selenium deficiency in parts of China. Best sources are butter, Brazil nuts, seafood and grains grown in selenium-rich soil.

**Silicon:** This much neglected element is needed for strong yet flexible bones and healthy cartilage, connective tissue, skin, hair and nails. In the blood vessels, the presence of adequate silicon helps prevent atherosclerosis. Silicon also protects against toxic aluminum. Good sources are grains with shiny surfaces, such as millet, corn and flax, the stems of green vegetables and homemade bone broths in which chicken feet or calves' feet have been included.

**Vanadium:** Needed for cellular metabolism and the formation of bones and teeth, vanadium also plays a role in growth and reproduction and helps control cholesterol levels in the blood. Deficiency has been linked to cardiovascular and kidney disease. Buckwheat, unrefined vegetable oils, grains and olives are the best sources. Vanadium is difficult to absorb.

**Zinc:** Called the intelligence mineral, zinc is required for mental development, for healthy reproductive organs (particularly the prostate gland), for protein synthesis and collagen formation. Zinc is also involved in the blood sugar control mechanism and thus protects against diabetes. Zinc is needed to maintain proper levels of vitamin E in the blood. Inability to taste or smell and loss of appetite are signs of zinc deficiency. High levels of phytic acid in cereal grains and legumes block zinc absorption. Zinc deficiency during pregnancy can cause birth defects. As oral contraceptives diminish zinc levels, it is important for women to wait at least six months after discontinuing the pill before becoming pregnant. Best sources include red meat, oysters, fish, nuts, seeds and ginger.

Not all minerals are beneficial. Lead, cadmium, mercury, aluminum and arsenic, while possibly needed in minute amounts, are poisons to the body in large quantities. These come from polluted air, water, soil and food; lead finds its way into the water supply through lead pipes. Sources of aluminum include processed soy products, aluminum cookware, refined table salt, deodorants and antacids. Baking powder can be another source of aluminum and should be avoided. Amalgam fillings are the principle source of toxic mercury in the system—linked to Alzheimer's and a number of other disease conditions. Minerals like calcium and magnesium, and the antioxidants—vitamin A, carotenes, vitamin C, vitamin E and selenium—all protect against these toxins and help the body to eliminate them. Adequate silicon protects against aluminum.

**Source:** *Nourishing Traditions: The Cookbook that Challenges Politically Correct Nutrition and the Diet Dictocrats* by Sally Fallon and Mary G. Enig, PhD., Revised Second Edition, ©2001, pp-40-45, NewTrends Publishing (877) 707-1776, [www.newtrendspublishing.com](http://www.newtrendspublishing.com).

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**Live true to your feelings, and you ARE living true, not only to your own soul, but also true to God's soul. So doing your Healing by honouring all your feelings, IS living the will of God. And being fully Healed, IS living even more truly the Will of your Mother and Father.**

# MINERALS

## Trace Elements and Minerals

**Much controversy and debate surrounds the subject of minerals. Sorting fact from fiction and debunking the myths about minerals!**

[http://www.health-report.co.uk/minerals\\_minerals.html](http://www.health-report.co.uk/minerals_minerals.html)

**Inorganic, organic, chelated, elemental, ionic, colloidal, essential, trace – all these claims!** What do we really need? Credentials in nutrition apparently mean very little when it comes to minerals. Much of what is written about minerals is speculative, market-oriented, or simply dead wrong.

A net search on minerals is an overwhelming assault on one's patience, time and credulity. How could all this stuff be right? Minerals come from mines right? Except when you're talking about nutrition. Then they come from food. At least they used to. **When we still had some mineralised viable topsoil to grow market vegetables in that is!** Four elements compose 96% of the body's makeup: carbon, hydrogen, oxygen, and nitrogen. The remaining 4% of the body's composition is mineral. There are several opinions about how many minerals are essential. The following table shows the ones that are not in dispute, in the first group. Macro means more than 100mg per day. Trace usually means we don't know how much we need and it is a very small quantity.

### Essential Minerals

**MACROMINERALS.....** 100mg per day

**Calcium**  
**Chlorine**  
**Sodium**  
**Potassium**  
**Phosphorus**  
**Magnesium**  
**Sulphur**

### TRACE ELEMENTS or MINERALS .....

**Chromium**  
**Tin**  
**Zinc**  
**Vanadium**  
**Copper**  
**Silicon**  
**Manganese**  
**Nickel**  
**Iron**  
**Molybdenum**  
**Fluorine**  
**Iodine**  
**Cobalt**  
**Selenium** – U.S. Dept. of Agriculture National Research Council

**The controversy primarily involves the second group – trace minerals.**

**Of the 14 trace minerals listed above**, three or four may not have universal agreement as essential, but the majority of credible sources admit that most of them are essential. Deficiency amounts have never been determined for most trace minerals, although several diseases have been linked with deficiencies of certain ones. Conclusive evidence has not been found regarding the exact daily intake amounts necessary, since some of the actual requirements may be too small to measure; hence the name “trace.”

**In the past few years**, even mainstream medicine is beginning to acknowledge the incontrovertible importance of mineral supplementation. In an article appearing in *JAMA*, the top American medical journal, 24 Dec 1996, a controlled study of selenium use for cancer patients was written up. Selenium has been proven to be a powerful stimulator in antioxidant activity, by helping to neutralize free radicals, which are rampant in the presence of cancer. In this study, 1,312 subjects were divided into groups. Some were given selenium; others the placebo.

**Soon it was noticed** that there was a decrease of 63% with prostate cancer, and 46% with lung cancer in the selenium group. The results were so blatant that the designers actually terminated the study early so that everyone could begin to benefit from selenium. This is just one example of the research that is currently being done on mineral supplementation. The problem is, if the results of studies economically threaten a current drug protocol, like chemotherapy, it is unlikely that an inexpensive natural supplement like selenium would be promoted by oncologists as a replacement in the foreseeable future.

**There are six nutrient groups:**

Water Minerals Vitamins Fats Protein Carbohydrate

**All groups are necessary for complete body function.**

The necessity for minerals is a recent historical discovery, only about 150 years old. In the 1850s, Pasteur’s contemporary, Claude Bernard, learned about iron. Copper came about 10 years later, and zinc about the turn of the century. With the discovery of Vitamin A in 1912, minerals were downplayed for about 50 years in favour of vitamin research. By 1950, after about 14 vitamins had been discovered, attention returned once more to minerals when it was shown that they were necessary co-factors in order for vitamins to operate. **Minerals are catalysts for most biological reactions.** Soon the individual functions of minerals in the body were demonstrated:

- **Structural: bones, teeth, ligaments**
- **Solutes and electrolytes in the blood**
- **Enzyme actions**
- **Energy production from food breakdown**
- **Nerve transmission**

### **Muscle action**

The following is a table of **minerals** linked with the specific functions most commonly agreed upon today:

<b>Calcium:</b>	Muscle contraction, Bone building.
<b>Sodium:</b>	Cell life, Waste removal.
<b>Potassium:</b>	Nerve transmission, Cell life, Normal blood pressure, Muscle contraction.
<b>Phosphorus:</b>	Bone formation, Cell energy.
<b>Magnesium:</b>	Muscle contraction, Nerve transmission, Calcium metabolism, Enzyme cofactor.
<b>Chlorine:</b>	Digestion, Normal blood pressure.
<b>Sulphur:</b>	Protein synthesis, Collagen cross-linking, bone and ligament structure.
<b>Copper:</b>	Immune system, Artery strength, Forms haemoglobin from iron.
<b>Chromium:</b>	Insulin action, Immune function, Glucose tolerance factor.
<b>Iron:</b>	Blood formation, Immune function.
<b>Selenium:</b>	Immune stimulant, Fight free radicals, Activates Vitamin E.
<b>Nickel:</b>	Immune regulation, Brain development, DNA synthesis.
<b>Iodine:</b>	Thyroid function.
<b>Vanadium:</b>	Circulation, Sugar metabolism.
<b>Molybdenum:</b>	Enzyme action.
<b>Silicon:</b>	Enzyme action, Connective tissue.
<b>Tin:</b>	Enzyme action.
<b>Manganese:</b>	Enzyme action.
<b>Fluorine:</b>	Teeth enamel.

- Larry Berger, PhD and Parris Kidd, PhD

**Zinc is necessary for antioxidant production**, which prevents aging and cancer. It is also a cofactor for some 80 metabolic enzymes. (Erasmus, p 172) Zinc is necessary for wound healing, fat metabolism, insulin function, semen production, tissue repair, especially skin, and HCl production. (Erasmus)

**Mineral deficiency means that some of these jobs will not get done.** The body is capable of prodigious amounts of adapting, and can operate for long periods of time with deficiencies of many of the above. But one day those cheques will have to be cashed. The result: premature aging and cell breakdown. **Without minerals, vitamins may have little or no effect.** Minerals are catalysts – triggers for thousands of essential enzyme reactions in the body. **No trigger – no reaction.** Without enzyme reactions, caloric intake is meaningless, and the same for protein, fat, and carbohydrate intake. **Minerals trigger the vitamins and enzymes to act; that means digestion.**

## DEFICIENCY

With the exception of those egregiously uninformed doctors who quack “you should be able to get all the nutrition you need from your food,” a virtually undisputed fact is deficiency. Mineral deficiency is the reason for the titanic output of websites, articles, and supplements visible today. The majority of mineral websites quote a 1936 source – Senate Document #264, as scientific proof that dietary minerals are generally inadequate for optimum health.

*"...most of us are suffering from certain diet deficiencies which cannot be remedied until deplete soils from which our food comes are brought into proper mineral balance."*

*"The alarming fact is that food... now being raised on millions of acres of land that no longer contain enough minerals are starving us... no matter how much of the food we eat."*

*"Lacking vitamins, the system can make use of minerals, but lacking minerals, vitamins are useless."*

*Senate Document 264 74th Congress, 1936*

The same document went on to quantify the extent of mineral deficiency:

*"99% of the American people are deficient in minerals, and a marked deficiency in any one of the more important minerals actually results in disease."*

Congressional documents are not generally highly regarded as scientific sources, and other reference texts cite other percentages. The figures quoted by Albion Laboratories, the world leader in patents on supplemental minerals, are somewhat lower, but the idea begins to come across:

## DEFICIENCIES – % of U.S. Population

Magnesium -	75%
Iron -	58%
Copper -	81%
Manganese -	50%
Chromium -	90%

**PASCAS  
PAPERS**

<b>Zinc -</b>	<b>67%</b>
<b>Selenium -</b>	<b>60%</b>

sources: Albion Labs, Fats That Heal

## **FIVE REASONS FOR MINERAL DEFICIENCY:**

### **1. SOIL DEPLETION**

**Different studies** will show different figures, of course, but there is certainly no lack of explanation for mass deficiencies of mineral intake. The most obvious of these is soil depletion and demineralisation.

**In 1900, forests covered 40% of the Earth.** Today, the figure is about 27%. (Relating Land Use and Global Land Cover, Turner, 1992). Aside from hacking down temperate forests and rainforests in order to raise beef cattle or to build condos, one of the main reasons for the dying forests is mineral depletion. According to a paper read at the 1994 meeting of the International Society for Systems Sciences, this century is the first time ever that “mineral content available to forest and agricultural root systems is down 25%-40%.” Less forests means less topsoil.

**In the past 200 years, the U.S. has lost as much as 75% of its topsoil,** according to John Robbins in his Pulitzer-nominated work Diet for a New America. To replace one inch of topsoil may take anywhere from 200-1,000 years, depending on climate. (Utah Teachers Resource Books)

**Demineralisation of topsoil translates to loss of productive capacity.** Contributing further to this trend is the growing of produce that is harvested and shipped far away. (This would also account for the depletion of minerals from forested areas where the logs are shipped away from the forest for processing. Eds note.)

The standard NPK (nitrogen-phosphorus-potassium) fertilizer farmers commonly use is able to restore the soil enough to grow fruits and vegetables which are healthy looking, but may be entirely lacking in trace minerals. The inventor of the entire NPK philosophy, Baron von Leibig, recanted his theories before he died when he saw the deficiencies his methods were fostering as they became the agricultural standard in both Europe and America.

**Mineral depletion in topsoil is hardly a controversial issue.** The question is not if, but how much. Plants are the primary agents of mineral incorporation into the biosphere. The implication for our position on the food chain is simply: lowered mineral content in produce grown in U.S. topsoil. Not much argument here.

There is not any known source that insists that the mineral content of American or any developed nations topsoil is as good today as it was 50 years ago. Generally, studies talk in terms of how much, if any, minerals are still present.

### **2. DIET**



The second contributor to mineral deficiency within the population is obviously, diet. Even if our produce did contain abundant minerals, less than 4% of the population eats sufficient fruits and vegetables to account for minimal RDAs. To compound matters further, mass amounts of processed food, excess protein, and refined sugars require most of our mineral stores in order to digest it and remove it. The removal process involves enzymes, which break things down. Enzyme activity, remember, is completely dependent on minerals like zinc, copper, chromium, selenium, cobalt and many others. **No minerals – no enzyme action.**

In addition, pasteurised / homogenised milk and dairy products, alcohol, and drugs inhibit the absorption of these minerals, further depleting reserves. So it is cyclical: refined foods inhibit mineral absorption, which then are not themselves efficiently digested because of diminished enzyme activity. **And then we go looking for bacteria and viruses as the cause of disease?**

### 3. MUCOID PLAQUE

The standard indigestible American / UK diet packs layer upon layer of plaque onto the inner lining of the colon. One of the prime functions of the colon is to reabsorb water, in order to prevent dehydration. Plaque prevents such a reclamation, and the result is that we lose both water and minerals that normally should be reabsorbed.

### 4. COMPETITION

**The fourth reason for inadequate minerals** in the body is a phenomenon known as secondary deficiency. It has been proven that an excess of one mineral may directly cause a deficiency of another, because minerals compete for absorption, compete for the same binding sites, like a molecular Musical Chairs. Secondary deficiency means that an excess of one mineral causes a deficiency of another. (Kidd)

For example, iron, copper, and zinc are competitive in this way. Copper is necessary for the conversion of iron to haemoglobin, but if there is excess zinc, less iron will be available for conversion. This may cause a secondary deficiency of iron, which can manifest itself as iron deficiency anaemia. All due simply to excess zinc! Researchers have found that these secondary deficiencies caused by excess of one mineral are almost always due to an imbalance of mineral supplements, since the quantities contained in food are so small.

### 5. DRUGS

**A fourth, and increasingly serious reason for mineral deficiency in humans is overuse of prescription drugs.** It has been known since the 1950s that antibiotics interfere with uptake of minerals, specifically zinc, chromium, and calcium. (The Plague Makers) Tylenol, Advil, Motrin, and aspirin have the same inhibitive effect on mineral absorption. Moreover, when the body has to try and metabolise these drugs to clear the system, its own mineral stores are heavily drawn upon. Such a waste of energy is used to metabolise laxatives, diuretics, chemotherapy drugs, and NSAIDs, such as Tylenol, Advil, and aspirin out of the body. This is one of the most basic mechanisms in drug-induced immune-suppression: **minerals are essential for normal immune function.**

**Ultimately, the only issue that really counts with minerals is bio-availability.** It really doesn't matter what we eat; it only matters what is available and is transported to the body's cells. Let's say someone is iron deficient, for example. Can't he just take a bar of iron and file off some iron filings into a teaspoon, and swallow them? Just took in more iron, didn't he? Will this remedy the iron deficiency? Of course not! Here is a major distinction: the difference between elemental minerals and nutrient minerals. Iron filings are in the elemental form; absorption will be 8% or less.

Same with most iron pills and most calcium supplements. Food-bound iron, on the other hand, like that contained in raisins or molasses, will have a much higher rate of absorption, since it is complexed with other living organic forms, and as such is classed as a nutrient mineral. Minerals are not living, though they are necessary for life. Minerals are necessary for cell life and enzyme reactions and hundreds, perhaps thousands of other reasons. But they must be in a form that can make it as far as the cells. What is not bio-available passes right through the body, a waste of time and often money spent on poor mineral supplements.

**Bio-availability has a precursor, an opening act.** It is called absorption. Take a mineral supplement pill. Put it in a glass of water and wait half an hour. If it is unchanged, chances are that the tablet itself would never even dissolve in the stomach or intestine, but pass right out of the body. **You would be astounded how many mineral supplements there are in this category.**

OK, let's say the tablet or capsule actually does dissolve in the digestive tract. Then what? In order to do us any good, the mineral must be absorbed into the bloodstream, through the intestinal walls. Elemental minerals are absorbed about 1%-8% in this manner. The rest is excreted. **Elemental minerals are those found in the majority of supplements,** because they're **very cheap to produce.** For the small percentage that actually makes it to the bloodstream, the mineral is available for use by the cells, or as catalysts in thousands of essential enzyme reactions that keep every cell alive every second. Use at the cellular level is what bio-availability is all about.

With this background in mind, we can begin to understand that varying amounts of the seven macro-minerals and approximately fourteen trace minerals are necessary in a bio-available form for optimum cell activity, optimum health and would seem to contribute to long lifespan.

**So besides mineral deficiency of epidemic proportions, what's the problem?**

**In a word, supplementation!** Mineral deficiency has become such an obvious health concern, causing specific diseases because of a lack of a single mineral, and general immune suppression with a lack of several... that the obvious need for supplementation has spawned an entire industry to the rescue. But in any market-driven industry involving pills, again we find that often the cures are worse than the original problems.

**Why?... Toxicity!**

Remember, even macro-minerals are only necessary in tiny amounts. Most trace minerals are necessary in amounts too small to be measured, and can only be estimated. Toxicity is a word that simply means extra stuff. When extra stuff gets put into the body, it's a big deal. All forces are mobilized for removal

of the extra stuff, which are called antigens, toxins, poisons, reactants, etc, but you get the idea – it doesn't belong there. Toxicity means taking a non-essential non-nutrient into the body.

Take lead poisoning, for example. If lead gets into the blood, the body will try to remove it. Since the metal atoms are so heavy compared with the body's immune forces, removal may be impossible. Lead can initiate a chronic inflammatory response and can remain in the body permanently, which is why we don't have lead in paint or gasoline any more.

Most minerals can be toxic if taken to excess. And this excess would not happen from food; only from supplements. This is why if you are supplementing with trace minerals where the daily dose has not been established you should be taking only micro amounts of them.

### **SO, WHAT SUPPLEMENTS WOULD BE BAD?**

Well, for starters, any supplement containing more than about 21 minerals, where the extra minerals are present in any other than **extremely small micro doses**, because little research, in fact no research in some cases, has been done on all the other trace elements. New toxicities are always being discovered.

**Aluminium linked to Alzheimer's is a recent discovery.** Beyond these 21 or so it's simply anybody's guess, no matter what they tell you about the 5 civilizations where people live to be 140 years old. People who show dramatic improvements from taking these broad spectrum mineral drinks generally were so depleted that they rapidly absorbed the essential minerals in which they were deficient. But the toxicities from the non essential, unknown minerals may take a long time to show up. Why take in anything extra? (In the case of micro supplementation with the other little known minerals, problems would not arise as these minerals would have all been available from properly mineralised food anyway and the body would either utilise them as needed or excrete them. So the possibility of any toxic effects from using micro amounts of the lesser known trace elements, as would be found in food growing on properly mineralised soils, would be remote indeed. (Eds note.)

Amidst all the confusion about minerals, one thing should be made absolutely clear: **we only need tiny amounts of virtually all the trace elements. So the mineral supplements we take should be as absorbable and as bio-available as possible** – that way we won't have to take much and there is very little chance of toxicity.

So the question then becomes: which mineral supplements are the most absorbable and the most usable, and therefore effective in the smallest amounts possible? Four candidates present themselves, all contending for the title:

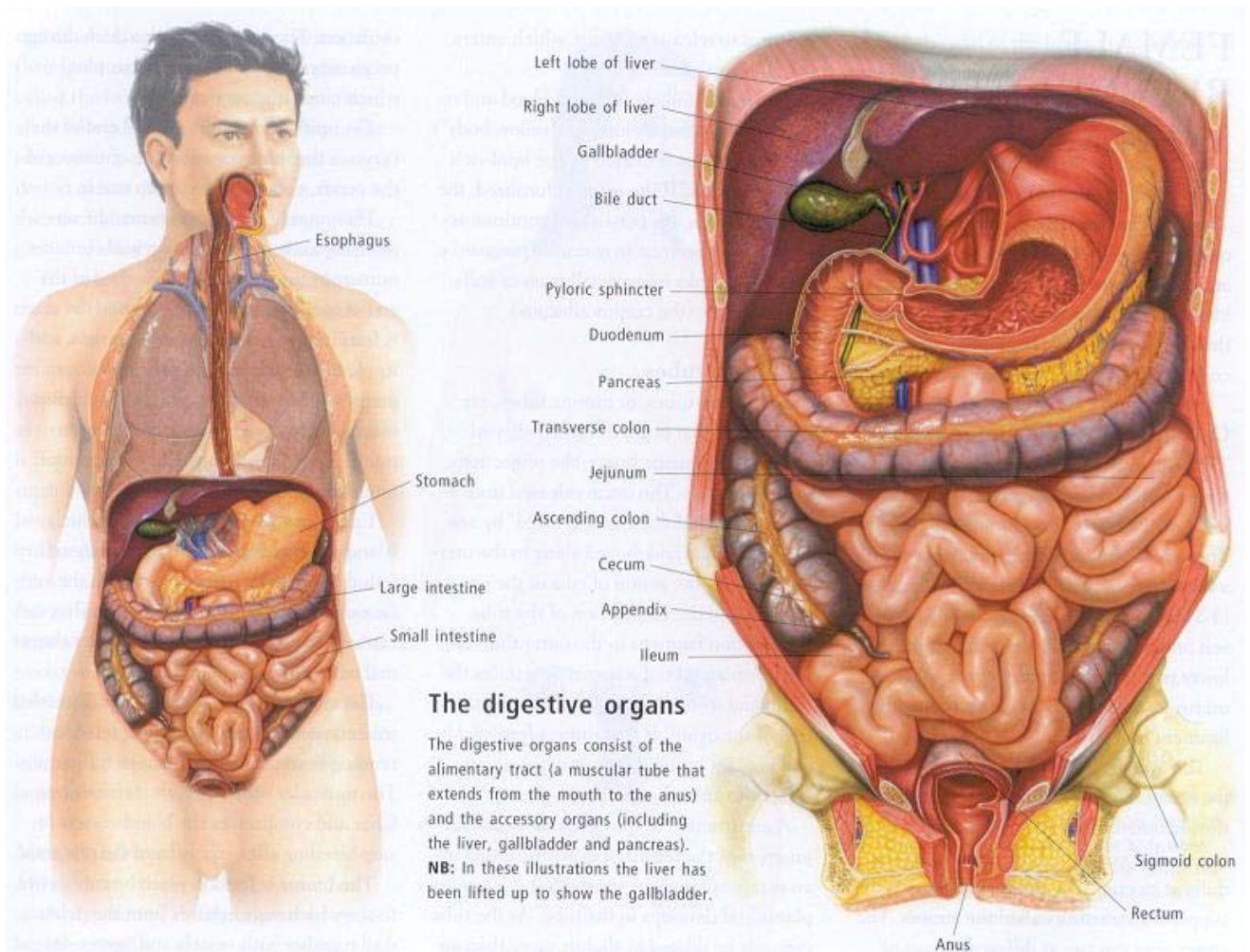
- **Elemental**
- **Ionic**
- **Colloidal**
- **Chelated**

Unravelling this puzzle is one area where a lot of confusion reigns.

There's only one answer, but it's buried deep. To find it, we have to review a little:

### BASIC PLUMBING:

**The digestive tract goes like this:** mouth, oesophagus, stomach, small intestine, large intestine, and out. Mineral absorption means transferring the mineral from the digestive tract through the wall of the intestine, into the bloodstream. You really have to picture this: the digestive tract is just a long tube, from one end to the other. As long as food and nutrients are inside this tube, they are actually considered to be still outside the body, because they haven't been absorbed into the bloodstream yet.



This is an essential concept to understanding mineral absorption. Minerals can't do any good unless they make it into the bloodstream. This is exactly why most minerals bought at the supermarket and over the counter from health shops, are almost worthless: they pass right through the body – in one end and out the other. It's also why many nutritionists' and dieticians' advice is valueless; they commonly pretend and even believe their own hype that everything that is eaten is absorbed.

### Two main reasons for lack of absorption:

- The pill never dissolved in the first place and was excreted along with other undigested stuff.

- The mineral was in its elemental form and was bio-unavailable. (non-nutrient, e.g., iron filings)

**Let's say these problems are overcome...** neither is true...or, let's say the mineral is contained within some food, such as iron in molasses, or potassium in bananas. Food-bound minerals are attached or complexed to organic molecules. Absorption into the blood is vastly increased, made easy. The mineral is not just a foreign metal that has been ingested; it is part of food. This is very important for the absorption of all minerals.

**Fruits and vegetables with high mineral content are the best way to provide the body with adequate nutrition.** Food-bound minerals are the original mode. As already cited above however, sufficient mineral content is an increasingly rare occurrence. Foods simply don't have sufficient quantities of most trace elements and minerals to properly sustain life. How little or what portion of normal depends on what studies one finds. Suffice to say virtually all scientists agree that we do need a broad spectrum of a large number of minerals and trace elements. So, the necessity for supplementation becomes patently obvious, if the food no longer has it, and we need minerals... then pass the mineral supplements, please. But what supplements?

## 1. ELEMENTAL

**Let's look at the four types one by one.** Least beneficial are the supplements containing minerals in the elemental form. That means the mineral is just mentioned on the label. It's not ionized, it's not chelated, it's not complexed with an oxide or a carbonate or a sulfate, or with a food, and it's not colloidal. Like under "ingredients" it just says "iron" or "copper," or "calcium," etc.

Elemental minerals are obviously the cheapest to make. A liquid would only have to be poured over some nails to be said to contain iron. Elemental minerals are the most common in supermarket and over the counter health store supplements. They may not be toxic, as long as only the minerals mentioned on the label are included in the supplement. The problem is absorption: it's between 1 and 8 percent. The rest passes right through. Not only a waste of money; also a waste of energy: it has to be processed out of the body. This can actually use up available mineral stores.

## 2. IONIC

**Next comes ionic minerals.** Usually a step up. Ionic means in the form of ions. Ions are unstable molecules that want to bind with other molecules. An ion is an incomplete molecule. There is a definite pathway for the absorption of ionic minerals through the gut (intestine) into the blood. In fact, any percent of the elemental minerals that actually got absorbed became ions first, by being dissolved in stomach acids. Ionic minerals are not absorbed through the intestine intact.

The model for mineral ion absorption through the intestine is as follows. Ions are absorbed through the gut by a complicated process involving becoming attached or chelated to some special carrier proteins in the intestinal wall. Active transport is involved; meaning, energy is required to bring the ionic mineral from inside the intestine through the lining, to be deposited in the bloodstream on the other side.

**Ionic minerals may be a good source of nutrients for the body,** depending upon the type of ions, and on how difficult it is for the ion to get free at the appropriate moment and location. Minerals require an

acidic environment for absorption. Low pH (less than 7) is acidic; high pH (above 7) is alkaline. As the stomach contents at pH 2 empty into the small intestine, the first few centimetres of the small intestine is the optimum location for mineral absorption. The acidic state is necessary for ionisation of the dissolved minerals. If the pH is too alkaline, the ions won't disassociate from whatever they're complexed with, and will simply pass on through to the colon without being absorbed.

**As the mineral ions are presented** to the lining of the intestine, if all conditions are right, and there are not too much of competing minerals present, the ions will begin to be taken across the intestinal barrier, making their way into the bloodstream. This is a complicated, multi-step process, beyond the scope of this article. Simply, it involves the attachment of the free mineral ion to some carrier proteins within the intestinal membrane, which drag the ion across and free it into the bloodstream. A lot happens during the transfer, and much energy is required for all the steps. Just the right conditions and timing are necessary – proper pH, presence of vitamins for some, and the right section of the small intestine.

**Iron, manganese, zinc, copper** – these ions are bound to the carrier proteins which are embedded in the intestinal lining. The binding is accomplished by a sort of chelation process, which simply describes the type of binding which holds the ion. The carrier protein or ligand hands off the mineral to another larger carrier protein located deeper within the intestinal wall. After several other steps, if all conditions are favourable, the ion is finally deposited on the other side of the intestinal wall: the bloodstream, now usable by the cells.

**Ionic mineral supplements do not guarantee absorption** by their very nature, although they are certainly much more likely to be absorbed than are minerals in the raw, elemental state. However, ionic minerals are in the form required for uptake by the carrier proteins that reside in the intestinal wall.

**The uncertainties with ionic minerals include how many**, how much, and what else are the unstable ions likely to become bound to before the carrier proteins pick them up. All ionic supplements are not created equal. Just because it's an ion doesn't mean a supplemental mineral will be absorbed. Too many and too big a quantity of specific minerals in a poorly designed supplement will compete for absorption. Too much of one or more minerals will crowd out the others. The idea is to offer the body an opportunity for balance; rather than to overload it with the hope that some will make it through somehow. Minerals are biologically active in tiny amounts and the best supplements are the ones that provide micro doses at non toxic levels.

**Recent scientific developments indicate far greater absorption of ionised minerals once they are complexed with organic fulvic acid.** The same organic acid found in healthy soil full of micro-organisms, which allows elemental minerals to be absorbed and utilised by growing plants. The bio availability of minerals once complexed with organic fulvic acid is many times greater than minerals simply in an ionised form.

### 3. COLLOIDAL

**Speaking of overloading**, the third type of supplemental minerals is the one we hear the most about: **colloidal**. What does colloidal really mean? Colloidal refers to a solution, a dispersion medium in which mineral particles are so well suspended that they never settle out: you never have to shake the bottle. The other part of the dictionary definition has to do with diffusion through a membrane: “will

not diffuse easily through vegetable or animal membrane.” Yet this is supposed to be the whole rationale for taking colloidal minerals – their absorbability.

**Colloidal guru Joel Wallach** himself continuously claims that it is precisely the colloidal form of the minerals that allows for easy diffusion and absorption across the intestinal membrane, because the particles are so small. Wallach claims 98% absorption, but cites no studies, experiments, journal articles or research of any kind to back up this figure.

**Why not? Because there aren't any.** The research on colloidal minerals has never been done. It's not out there. Senate Document 264 doesn't really cover it.

In reality, colloidal minerals are actually larger than ionic minerals, as discussed by researcher Max Motyka, MS. Because of the molecular size and suspension in the colloid medium, which Dorland's Medical dictionary describes as “like glue,” absorption is inhibited, not enhanced. No less an authority than Dr Royal Lee the man responsible for pointing out the distinction between whole food vitamins and synthetic vitamins, stated:

*“A colloidal mineral is one that has been so altered that it will no longer pass through cell walls or other organic membranes.”*

**Does that sound like easy absorption?**

*Stedman's Medical Dictionary* talks about colloids ...*“resisting sedimentation, diffusion, and filtration...”* Again, resisting diffusion seems to indicate inhibition of absorption, not increased absorption, wouldn't you think?

As Alexander Schauss and Parris Kidd both explain... *“colloids are suspensions of minerals in clay and water. Clay often has levels of aluminium as high as 3,000 parts per million, with safety levels set at 10 ppm or lower (Kidd). Aluminium has been proven to kill nerve cells, which we now see in the pathophysiology of Alzheimer's.”*

Dr. Schauss characterizes the aluminium content as the big problem with colloidal minerals. He cites a standard geology reference text – Dana's Manual of Mineralogy – describing clay as primarily aluminium:

*“Clay minerals are essentially hydrous aluminium silicates.”*  
– Dana's Manual, p436

And another geology text: *“[clays] are essentially hydrous aluminium silicates and are usually formed from the alteration of aluminium silicates.”* – Mineral Recognition p 273

Schauss finds references as high as 4,400 PPM of aluminium in colloidal clay. Schauss states that he has done an exhaustive search for any human studies using colloidal minerals and after searching 2,000 journals, like everyone else, has come up with zero.

**For a mineral to be absorbed, it must be either in the ionic state and preferably complexed with organic fulvic acid**, or else chelated, as explained above. The percentage of colloidal minerals which actually does get absorbed has to have been ionized somehow, due to the acidic conditions in the small intestine. Only then is the mineral capable of being taken up by the carrier proteins in the intestinal membrane, as mentioned above. But why create the extra step? Ionic minerals would be superior to colloidal, because they don't have to be dissociated from a suspension medium, which is by definition non-diffusible. All this extra work costs the body in energy and reserves.

In an editorial in *Am J of Nat Med*, Jan 97, Alexander Schauss further points out the error of Wallach's claims. Wallach states that colloidal minerals are negatively charged, and this enhances intestinal absorption. The problem is his science is 180° backward: Wallach claims the charge of the intestinal mucosa is positive, but all other sources have known for decades that the mucosal charge is negative. (Guyton, p13) This is why ionic minerals are presented to the intestinal surface as cations (positively charged ions). Opposites attract, like repels – remember? Another big minus for colloids.

## QUALITY CONTROL

**What consistency of percentages of each mineral from batch to batch is there?** Very simply, there isn't any with most of the mega mineral supplements, as many of the manufacturers will themselves admit. The ancient lakes and glaciers apparently have not been very accommodating when it comes to percent composition. Such a range of variation might be acceptable in, say, grenade tossing or blood dilution in seawater necessary to attract a shark, or IQ threshold of terrorists, or other areas where high standards of precision are not crucial. But a nutritional supplement that is supposed to enhance health by swallowing it – this is an area in which the details of composition should be fairly visible, verifiable, the same every time.

**To ensure you are getting the minerals and trace elements at the correct rate a reputable company will use standardisation techniques for all the minerals which have are known to be essential and only include the lesser known elements in micro amounts.** In addition a properly formulated mineral supplement will have been rigorously tested for the poisonous and toxic minerals such as aluminium, lead and cadmium and all traces removed.

In many of these 80-trace-mineral toddies, there is no way of testing the presence or absence of many of the individual minerals. Many established essential trace minerals do not even have an agreed-upon recommended daily allowance, for two reasons:

1. **The research has never been done.**
2. **The amounts are too small to be measured.**

## TOXICITY AND COMPETITION

**Some essential minerals are toxic in excess**, but essential in small amounts. Iron, chlorine, sodium, zinc, selenium and copper are in this category. Toxic levels have been established, and resulting pathologies have been identified: we know what diseases are caused by their excesses. How risky is it to take in 40 or 50 minerals for which no toxicity levels have ever been set? Again it must be stressed



that micro amounts of trace elements, similar to levels found in plants growing on properly mineralised land is the only safe way to be taking a broad spectrum mineral supplement.

The problem is selective utilization, as explained by Dr. Parris Kidd. Toxic trace minerals may closely resemble the essential minerals in atomic configuration. The result is competition for enzyme sites by two similar minerals only one of which is beneficial:

*“aluminum competes with silicon cadmium competes with zinc tellurium competes with selenium lanthanum competes with calcium...”* – Kidd, p42

We also know that zinc competes with iron. (Erasmus)

**A separate hoax is being played out with**

**COLLOIDAL SILVER:** Used by many as a “natural antibiotic.” Extremely uninformed physicians recommend daily doses of colloidal silver, in order to “prevent” colds, in the absence of any studies or trials whatsoever. As Dr. Kidd points out: *“...the body is not well-equipped to handle silver. This element can poison the kidneys, become deposited in the brain, and even give to the skin a gunmetal type of gloss.”*

Doug Grant, a nutritionist, cites several minerals which frequently appear on the ingredient labels of certain mega-mineral products – they actually admit their supplements contain or “may contain” some of the following: (the phrase “may contain” has always been scary for me. If they’re not sure, then what else is there that this product “may contain” that they don’t know about?)

**Aluminium:** Documented since the article in *Lancet* 14 Jan 1989 to be associated with Alzheimer’s Disease, as well as blocking absorption of essential minerals like calcium, iron, and fluoride. If you want to ingest large amounts of aluminium simply start taking antacid tablets or absorb it through your skin by applying anti-deodorant under the arms!

**Silver:** Questionable as a single-dose antibiotic, consistent intake of silver accumulates in the blood-forming organs – spleen, liver, and bone marrow-, as well as the skin, lungs, and muscles. Serious pathologies have resulted: blood disorders, cirrhosis, pulmonary edema, chronic bronchitis, and a permanent skin condition known as argyria, to name just a few. Silver is better left in the ancient lakes, and in tableware. It should not be taken regularly as a supplement on its own.

**Gold:** Manufacturers of mega-minerals hawk that “there’s more gold in a ton of seawater than there is in a ton of ore.” So what? Our blood is not seawater; it evolved from seawater. Gold used to be used to treat rheumatoid arthritis, but has largely been abandoned when they proved that it caused kidney cell destruction, bone marrow suppression, and immune abnormalities.

**Lithium:** Rarely used as an antipsychotic medication, lithium definitely can cause blackouts, coma, psychosis, kidney damage, and seizures. Outside of that, it should be fine.

The list goes on and on. These are just a few examples of mineral toxicities about which we have some idea. But for at least half the minerals in the mega toddlers, we know nothing at all.

#### 4. CHELATED

**The fourth form of supplemental minerals is the chelated variety.** Some clarification of this term is immediately necessary. Chelated is a general term that describes a certain chemical configuration, or shape of a compound in which some molecule gets hooked up with some other chemical structures. When a mineral is bound or stuck to certain carrier molecules, which are known as chelating agents, or ligands, and a ring-like molecule is the result, we say that a chelate is formed. Chelate is from the Greek word for claw, suggested by the open v-shape of the two ligands on each side, with the mineral ion in the centre.

**Chelation occurs in many situations.** Many things can be chelated, including minerals, vitamins, and enzymes. Minerals in food may be bound with organic molecules in a chelated state. Many molecules in the body are chelated in normal metabolic processes. The carrier proteins in the intestinal wall discussed above, whose job it is to transport ionic minerals – these chelate the ions. Another sense of the word chelation as exemplified in a mainstream therapy for removing heavy metals from the blood is called chelation therapy. The toxic metals are bound to a therapeutic amino acid ligand called EDTA. With a Pac-Man action, the metals are thus removed from the blood.

Molecular weight is measured in units called daltons. The ligands or binding agents may be very small (800 daltons) or very large (500,000 daltons) resulting in a many sizes of chelates. Mineral + ligand = chelate. Generally the largest chelates are the most stable, and also the most difficult to absorb. Ionic minerals absorbed through the intestine are chelated to the carrier proteins, at least two separate times.

Using the word chelated with respect to mineral supplements refers a very specific type of chelation. The idea is to bind the mineral ion to ligands that will facilitate absorption of the mineral through the intestine into the bloodstream, bypassing the pathway used for ionic mineral absorption. Sometimes minerals prepared in this way are described as “pre-chelated” since any ionic mineral will be chelated anyway once it is taken up by the intestinal membrane.

After decades of research at Albion Laboratories in Utah, it was learned that small quantities of amino acids, especially **glycine**, are the best ligands for chelating minerals, for three reasons: (You will find the best mineral formulas are always combined with amino acids **especially glycine**. Eds note)

1. **Bypasses the entire process of chelation by the intestine’s own carrier proteins.**
2. **Facilitates absorption by an entirely different pathway of intestinal absorption, skipping the intermediate steps which ionic minerals go through.**
3. **The chelate will be at the most absorbable molecular weight for intestinal transfer: less than 1,500 daltons**

**It has also been established beyond controversy that certain pairs of amino acids** (dipeptides) are the easiest of all chelates to be absorbed, often easier than individual amino acids. **Proteins are made of amino acids.** Normal digestion presumably breaks down the proteins to its amino acid building blocks so they can be absorbed. But total breakdown is not always necessary. It has long been known

that many nutrient chains of two or three or even more amino acids may be absorbed just as easily as single amino acids. Food-bound copper, vitamin C with haemoglobin molecule, animal protein zinc, are some examples of amino acids chelates that are easily absorbed intact. (Intestinal Absorption of Metal Ions, Chapter 7).

**To take another example**, in abnormal digestion it is well known that chains of amino acids – dipeptides, tripeptides, even polypeptide proteins – sometimes become absorbed intact in a pathology known to gastroenterologists as Leaky Gut Syndrome. Obviously it is not healthy and has many adverse consequences, but the point is that amino acids chains are frequently absorbed, for many different reasons. It's not always like it says in the boldface section headings in Guyton's Physiology.

The reason these dipeptide chelates are absorbed faster than ionic minerals is that the chelated mineral was bonded tightly enough so that it did not dissociate in the acidic small intestine and offer itself for capture by the intestinal membrane's carrier proteins. That whole process was thus avoided. The chelate is absorbed intact. An easier form. This is a vast oversimplification, and the most concise summary, of why chelated minerals may be superior to the standard ionic forms of mineral supplements, provided it's the right chelate. Only a specific chelate can resist digestion and maintain its integrity as it is absorbed through the gut. Again, all chelates are not created equal. Inferior chelates, used because they are cheaper to produce, include the following:

- **carbonates**
- **citrates**
- **oxides**
- **sulphates**
- **chlorides**
- **phosphates**

If the label gives one of these chelates, it means the mineral is bound either too strongly or not tightly enough, and will be released at the wrong time and the wrong place. Chelation of minerals in nutrient supplements is a very precise science, yielding chelates superior to those occurring naturally in foods.

Intact absorption is faster, easier, and requires less metabolic energy, provided the chelate is about 1,500 daltons.

To compare chelated and ionic minerals, once the research is presented, there is really not much of a dispute about which is absorbed faster, ionic minerals or dipeptide-like amino acid chelates. Meticulous isotope testing has shown the following increases in percent absorption of chelates, as compared with ionic:

<b>Iron</b>	<b>490% greater</b>
<b>Copper</b>	<b>580% greater</b>
<b>Magnesium</b>	<b>410% greater</b>
<b>Calcium</b>	<b>421% greater</b>
<b>Manganese</b>	<b>340% greater</b>

– Source: *Journal of Applied Nutrition* 22:42 1970

Again, this is just the briefest glance at the prodigious amount of research comparing ionic with chelated minerals, but the results are uniform. The winner of the bioavailability contest is: **chelated minerals, provided the chelate was maintained as small as possible**, generally using glycine as the amino acid ligands, at a total weight of about 1,500 daltons.

(In the case of ionised minerals complexed with organic fulvic acid, amino acids including glycine, phyto nutrients and essential vitamins, the balance swings back in favour of the ionised formula. New research is indicating that mineral formulas presented to the body in these complex matrixes are the most bio-available of all the mineral formulas on the market. Eds note).

## **FOOD-BOUND CHELATED MINERALS**

Often you will hear this or that company claiming that “organic” minerals contained in food are the best, cannot be improved upon, and are superior to all possible types of mineral supplements. This is almost true. The only exception is glycine-chelated minerals, for two reasons: – the exact amount of minerals in any food is extremely variable and difficult to measure, even if there is high mineral content of the soil. **Pesticides destroy root organisms in the soil.** These bugs play a major role in selective mineral absorption. (Jensen p 55)

The ligands that bind the mineral in the food chelate may be too strong or too weak to dissociate at exactly the right time for maximum absorption in the human digestive tract. Glycine chelates are uniform and easily measurable. No question about dosage.

**Marketing is a wonderful thing** – two different companies are now attributing the longevity of the Hunza tribe in Pakistan to two entirely different properties of their water: one, the minerals; the other, molecular configuration. A classic error in logic is described as “post hoc, ergo propter hoc” – after this, therefore because of this. Maybe it was the weather that made the Hunzas live longer, or their grains, or the absence of toothpaste or webservers or... Marketing is the art of persuasion by suspending logic.

**The average lifespan of an American is about 75 years.** No one has ever proven that taking mineral supplements will extend life because no one has been studying people for long enough as far as minerals are concerned. Many old people never took a mineral or a vitamin in their life. However, by the same token most really old people have lived the vast majority of their years eating far less adulterated, denatured and demineralised food than what young people do today. It really comes down to quality of life and the incidence of chronic and degenerative disease during the lifespan!

**For how many days or months of the total lifespan was the person ill?** We are the walking petri dishes of Alexis Carrel – remember? Carrel was the French biochemist, a Nobel prize winner, who did the famous experiment in which he kept chicken heart cells alive in a petri dish for 28 years just by changing the solutes every day. Could’ve gone longer, but figured he’d proven his point. Mineral content factors largely in the quality of our solutes: the blood – the milieu interior, the biological terrain.

**The U.S. has the highest incidence of degenerative diseases of any developed country on Earth.** (The UK is a very close second Eds Note) In addition, the infectious diseases are coming back; antibiotics are getting less effective every year. Americans’ confidence in prescription drugs is

weakening. Allow me to disabuse you of unfounded hopes: cancer and AIDS will never be cured by the discovery of some new drug. It's not going to happen. There probably will never be another Alexander Fleming – turns out penicillin was just a brief detour anyway. Bacteria have had 5 billion years to figure out ways to adapt. **The only way that anyone recovers from any illness is when the immune system overcomes the problem.** Allergy shots never cured an allergy – people who take allergy shots always have allergies.

**Our only hope of better health is to do everything possible to build up our natural immune system. One of these preventative measures is nutritional supplementation. It may not be dramatic, but daily deposits to the immune system bank account will pay off down the road. Healthy people don't get sick.**

With respect to minerals, then, what are our goals? My opinion is that having once realized the necessity for mineral supplementation, our objectives should be simple:

- **Take only the minerals proven to be essential that we absolutely need.**
- **Take the smallest amounts possible of any others.**
- **Nothing left over (no metabolic residue)**

**Some of the above ideas may seem strange** and difficult to understand, on first reading. But it is truly a very simplified version of what actually takes place. Most of the technical details were omitted for the sake of clarity and brevity. However, the correctness of the above basic framework is verifiable. The reader is encouraged to flesh things out a little by consulting the attached reference list.

We are living in the age of the Junk Science Hustle. Everybody's an expert, often quoting shaky sources, shaky facts, and shaky claims which may have no foundation in physical reality. Seems there's a formula:

1. Get a product.
2. Get a marketing company.
3. Get some university MD endorsements.
4. Get some miraculous testimonials.

**In a certain way, all this is actually a good sign** – a natural consequence of the explosion in holistic nutrition and supplementation. Because in the midst of the quagmire of hype and junk science, some truly superlative items have emerged onto the marketplace which have benefited indirectly from biomedical advances evolved in the challenged, time-bomb world of mainstream pharmacology.

**Most, if not all of the new holistic supplements are far less toxic than standard pharmaceutical drugs**, because they're in a category the FDA calls GRAS (Generally Regarded As Safe. That's definitely a lot more than we can say for Prozac, fen-phen, and Viagra, Etc.) Many of the extraordinary holistic supplements won't be sold in stores, and no one is going to give them away. So welcome to the

marketplace. Very time-consuming and confusing is the screening process one must go through to unearth the treasures that can reward the patient and resolute search. Caveat emptor.

### **Are minerals important?**

**Two-time Nobel Prize winner Linus Pauling thought so:**

*“You can trace every sickness, every disease, every ailment to mineral deficiency.”*

Using the image of Carrel’s solutes in the petri dish as the analogue of blood in our bodies, adequate mineral content is undoubtedly an advantage and a vital component of the body’s own solutes in its constant effort to cleanse and operate all its cells at an optimum metabolic vibrancy and resilience.

### **Healthy people don’t get sick. Ever!**

Our special thanks to Dr Tim O’Shea author of this article. You can read more of Dr O’Shea’s work on [www.thedoctorwithin.com](http://www.thedoctorwithin.com)

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**Q. What are minerals?**

A. As simple as it may seem, this question is the first step in examining the role of minerals in nutrition. Webster describes minerals as solid, crystalline substances (diamond, copper, quartz, etc.) not of animal or vegetable origin. Important in this definition is the indication that their origin is not from animal or vegetable sources. Minerals for nutritional purposes cannot be synthesized by the body. They must be utilized as natural elements from nature.

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**Q. Why are minerals important?**

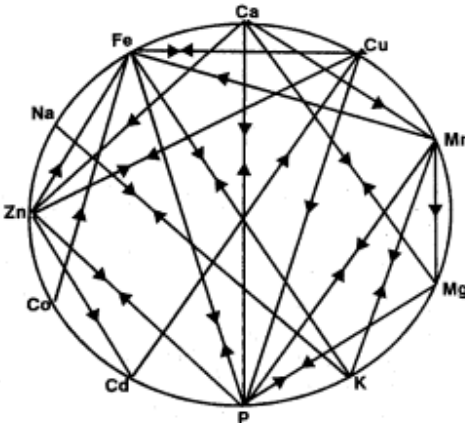
A. The following table shows various systems in the body which utilize minerals. Research is showing that imbalances or deficiencies in mineral nutrition can affect these systems.

Immune System. . . . .	Cu, Zn, Fe, Se
Energy Production. . . . .	Mg, P, Mn
Hormone System . . . . .	Fe, Mn, Zn, Cu, Mg, K
Vitamin Production. . . . .	Co
Blood Production. . . . .	Cu, Fe
Enzyme Systems . . . . .	Zn, Cu, K, Mn, Mg, Fe, Ca, Mo
Skeletal System . . . . .	Ca, Mg, Zn, Mn, B, P
Reproduction . . . . .	P, Cu, K, Mn, Zn, Mg

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**Q. Are there antagonisms between minerals that affect nutrition responses?**

A. Yes. Looking at the mineral wheel, wherever a mineral has an arrow pointing to another mineral, interference exists. This is caused by an imbalance of one mineral in relation to the other. The antagonism can cause problems with mineral utilization.





The key here is mineral balance. Not only are the levels of individual minerals important but the ratio of one mineral to another can affect final utilization.

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**Q. What is BIOAVAILABILITY and why is it important?**

A. One good definition of Bioavailability is the amount of a nutrient ingested that is absorbed and thus available to the body for metabolic use.

Bioavailability is important because all nutritional intake must be available to various body systems for growth, maintenance of body tissues, reproduction and other performance factors. No matter how high the nutrient levels or how well formulated the product, if it is not available then money and effort have been wasted.

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**Q. What are chelated minerals?**

A. When minerals such as zinc, manganese, magnesium, copper, iron, calcium, and others become surrounded by and bonded to amino acids, in a stable form, this is referred to as chelation. Chelation is a natural means for the body to transport minerals across the intestinal wall as part of digestion.

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**Q. Why are minerals bound to amino acids to form a chelate?**

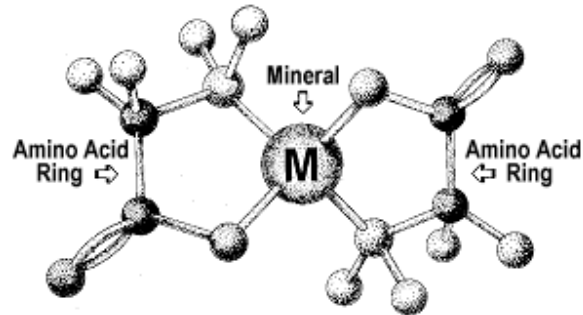
A. The body is very efficient at absorbing amino acids. In a priority list of nutritional substances crossing the intestinal wall, after digestion, dipeptides (two amino acids linked together through a special bond) and single amino acids rank highly. In fact, dipeptides now appear to be absorbed at a higher rate than the single amino acids. This is an apparent by-product of their special active transport mechanism of absorption. It has been seen that dipeptides are removed from the interior of the intestine at a much faster rate than single amino acids. Chelating minerals to amino acids, in a dipeptide-like fashion, allows this mineral form to be smuggled via this special active transport system across the intestinal lining into the system.

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**Q. Why is it important for the mineral to have a stable bond to the amino acid?**

A. Simply mixing inorganic minerals with amino acids in a liquid or dry mixture does not fall into the category of a true amino acid chelate. This simple ionic and hydrogen bonding of minerals to amino acids does not produce a stable product. Special processing must be performed to create a stable (covalent) bond which is important for greater bioavailability. Albion Laboratories has patented processes to assure this bond is formed.

### Amino Acid Chelate Molecule



There are many products on the market which are reported to be chelates. Some are only complexed mixtures of minerals and proteins not fitting into the definition of true amino acid chelates. These lose integrity during digestion, becoming unstable and compromising availability.

#### **Q. What makes Albion chelates so effective?**

- a. **Size:** Picture in your mind the fuel filter on your car engine. The filter allows fuel to pass through but holds back large particles from entering the engine. The same idea applies to the absorption of minerals from the intestine to the blood stream. Large particles cannot easily pass through the intestinal wall. Many mineral products on the market have molecular weights too large to be absorbed intact.

Through patented technology, Albion has been able to produce chelated minerals with molecular weights small enough to pass easily through the intestinal wall. The result is a compound similar to that which the body itself produces by natural chelation.

- b. **Stability:** The Albion chelation process guarantees pH stability of this unique mineral molecule. Stability is maintained throughout the entire pH range encountered during the digestion process. This assures maximum presence of intact mineral chelate for absorption via the special dipeptide-like absorption process.

The body cannot utilize traditional mineral compounds in their natural state. Zinc sulfate, iron sulfate or any mineral sulfate, oxide or carbonate must be broken apart and restructured to allow it to be transported through the intestinal wall.

A similar situation exists with some reported chelates or complexed mineral products. Not properly stabilized, they break apart, exposing the raw, ionized mineral.

It is after digestion when other mineral forms have their mineral payload cleaved from their carriers. In this situation, these minerals become charged ions, and their absorbability comes into jeopardy. These charged free minerals are known to block the absorption of one another, or to combine with other dietary factors to form compounds

that are unabsorbable. Chelates must be manufactured according to specific patented technology that maintains the bioavailable stability of these nutritionally functional mineral amino acid chelates.

- c. Neutrality: The process of chelation results in the final mineral compound becoming neutral, i.e., containing no electrical charge. Why is this important? Mineral compounds that have electrical charges can interact with other dietary components, such as phytates and other oppositely charged molecules, and from substances that are not absorbable. In addition, mineral compounds that have an electrical charge are reactive, and as such they can deactivate other important nutrient factors, such as: vitamin E, ascorbic acid, various B-vitamins, as well as important medications.

### **Q. Why are Albion chelated minerals better?**

A. Only Albion Laboratories has developed the ability to closely duplicate the natural chelation process which occurs in the body. Essentially, Albion has the ability to turn inorganic rocks (mineral sources) into small organic molecules. This makes them highly bioavailable and therefore more effective. It is a reliable means of providing mineral nutrition.

### **Q. What proof is there of the greater bioavailability of Albion chelated minerals?**

A. Over the years, numerous clinical studies have been performed by leading university and independent researchers that have demonstrated the superior bioavailability of the unique chelates formed via Albion's patented processes. Only Albion Laboratories has been able to demonstrate the superior bioavailability of the unique chelates formed via Albion's patented processes. Only Albion Laboratories has been able to demonstrate that its patented technology produces totally reacted, nutritionally functional mineral amino acid chelates. Albion Laboratories has incorporated many scientific procedures showing the validity of their chelation technology. Testing procedures utilizing some of the following determinative methods are part of the proof.

- A. X-ray Diffraction
- B. Nuclear Magnetic Resonance (NMR) Spectroscopy
  - 1. Nitrogen Scanning
  - 2. Carbon Scanning
- C. Mass Spectrometry
- D. Infrared Spectrometry (IR)
- E. Specific Electrode
- F. Atomic Absorption Spectrometry
- G. X-ray Photoelectron Spectrometry

**Q. How does one evaluate Albion chelates against the other mineral forms in the marketplace which also talk of availability?**

A. Simply ask the following questions:

- a. Are the minerals truly chelated to amino acids or just complexed by mixing trace minerals with protein?

Albion chelates are made to fit the definition of chelation most like the body's own method: low molecular weight, neutral, natural. Albion can prove it!

- b. Does the product have stability when subjected to various pH ranges found in digestion. (2.0 – 7.5)?

Albion chelates are stable and remain intact throughout digestion. Albion can prove it!

- c. Is the mineral product small enough in size allowing unhindered movement through the intestinal wall?

Albion chelates are processed to critical size requirements. In terms of molecular weight, only Albion can prove it!

- d. Does the product have test data to show it really works?

Albion has accumulated documentation from over 40 years of research and development, on its way to over 50 current patents. This documentation comes from intense analytical work, and well designed clinical studies. Albion can prove it!

- e. Compare pricing.

You may pay less for some reported chelates and complexes, but is it really cheaper? If the product is not truly a chelate then you are essentially paying a premium for fancy inorganic minerals. Without guaranteed availability, you lose two ways: cost and mineral utilization.

Only true amino acid chelates as described in Albion's brochure will give you your money's worth. Don't be fooled by imitations.

<http://www.pascashealth.com/index.php/library.html>

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## **PLANT MINERAL NUTRITION:**

### **I. MINERAL NUTRITION – AN OVERVIEW**

-mineral elements are essential to plant growth

-nutrient cycles may limit nutrient availability

-mineral nutrition has important consequences at agricultural, environmental levels (e.g. crop productivity)

### **II. ESSENTIAL ELEMENTS in PLANTS**

-essential nutrients are *required* to complete life cycle of plant

#### **Major Categories**

-*mineral* (inorganic) and *non-mineral* (organic, Carbon-containing) nutrients

-*macronutrients* are required in large amounts, *micronutrients* in small amounts

#### **Essential Nutrients**

-**N** – constituents of many compounds – amino acids, nucleic acids, chlorophyll, etc.

-**P** – constituent of nucleic acids, phospholipids, ATP, NAD, NADP, etc.

-**K** – cofactor for enzymatic reactions; osmotic balance particularly stomata

-**S** – constituent of proteins, Coenzyme A, etc.

-**Ca** – Calcium pectate of middle lamella; important in signal transduction

-**Mg** – constituent of chlorophyll; important in nucleic acid structure; coenzyme

-**Fe** – constituent of cytochromes, ferredoxin. Needed for chlorophyll synthesis. Enzyme cofactor

-**Mn** – coenzyme for numerous reactions – Krebs cycle; nitrate reductase

-**Cu** – coenzyme – oxidases. In plastocyanin – a carrier in photosynthetic phosphorylation

-**Zn** – Needed for IAA synthesis and protein synthesis; cofactor – numerous dehydrogenases

-**Mo** – Important in nitrate reduction and nitrogen fixation. Also a cofactor.

-**B** – Uncertain. Possibly involved nucleic acid synthesis, cell elongation, hormone responses and membrane function..

-Cl – Photosynthesis (deficiency rarely seen in nature).

-Ni – Cofactor for the enzyme urease. Deficiency never seen as amounts needed are minute.

### **Beneficial Nutrients**

-Co – nitrogen fixation

-Na – can partly replace K

-Se – can reverse P toxicity in susceptible plants

-Si – can improve growth of cereals, cell wall component

### **III. INVESTIGATING MINERAL NUTRITION**

-soil is a complex growth medium, so *hydroponic* growth and nutrient growth solutions are used to investigate mineral roles

-problems can occur with speciation, solubility and the role of *chelating agents*

-plant mineral deficiencies (diseases) can be readily observed, (e.g. nitrogen deficiency leads to *chlorosis*)

-growth is dependent upon concentration – intermediate levels often needed, high levels can be toxic

### **Soil properties and ion exchange**

In order of particle size (sand > silt > clay), and organic humus – the best soil is a mixture

-minerals exist in soil solutions as charged ions

-**colloidal properties** of soil particles (hydrated, negatively charged) provide high cation binding capacity

-**cation exchange** (abiotic and biological), H<sup>+</sup> or K<sup>+</sup> ions from plant roots displace positively charged ions bound to soil particles

-exchangeability of ions varies according to binding affinity (*lycotropic series*)

-negatively charged particles (NO<sup>3-</sup>) are weakly bound and tend to *leach* from the soil

### **pH affects mineral availability**

-**acid pHs** (high H<sup>+</sup> concentration) tend to displace positive ions from the soil, liming, acid rain

**-High pH** – can lead to Fe deficiency- precipitates from solution as Fe oxides or hydroxides; Mn, Zn, Mg, Ca,  $\text{PO}_4$  become less available or unavailable

**-Low pH** – Fe, Mn, Al become very soluble and toxic; Mo unavailable; Mg, K may be in short supply in acidic sandy soils

#### IV. ION TRANSPORT

-mineral ions and water are taken up in zones near root tip

-enter root via apoplast or symplast, but **Casparian strip** forces movement through protoplast of endodermal cells where *membrane selectivity* can occur.

- Diffusion into cell depends on *concentration gradient* and *membrane permeability*.

- Lipid soluble molecules diffuse easily.

- Water diffuses easily through *aquaporins*

- Non electrolytes (non charged ions) penetrate at a rate determined by concentration gradient and lipid solubility; polar non-charged molecules move through transmembrane proteins

- Electrolytes (Charged ions) penetrate slowly and are influenced by other ions because of their charge. Rate of diffusion and equilibrium distribution is determined by concentration difference and electrical potential across membrane = *electrochemical potential gradient*.

-Some ions *actively* taken up ( $\text{SO}_4$ ), others ( $\text{Na}^+$ ) are transported outwards to prevent *passive* accumulation.

-Ions enter xylem stream; backward diffusion prevented by **Casparian strip**.

#### V. MYCORRHIZAE: Fungal Assistants in Root Processes

-Most plants have a symbiotic fungal association in their roots.

**-ectomycorrhizae**, typical of trees, *ensheath* the roots, producing a very extensive network in the soil, and penetrate the intercellular spaces;

**-vesicular-arbuscular mycorrhizae (endomycorrhizae)** develop *within* the cortical cells producing branched arbuscules within the cells, but have no root-ensheathing layer. The arbuscules are surrounded by the plasma membrane and facilitate the exchange of nutrients.

-fungal hyphae take up nutrients, particularly insoluble phosphorus, and pass them onto the plant, while the plant provides carbohydrates to the fungus.

-ancient and specific relationship.

**By living true to ourselves, true to our feelings, we are living true to God. It's that simple.**

**The DIAKYNE TECHNOLOGY – BLOOD TESTING for MINERALS:**

Diakyne has developed an innovative technology (the “Technology”), centred on Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS). It is a breakthrough technology platform using ‘real-time’ mass spectrometry for very accurate essential element and heavy metal contaminant analysis. Its primary applications are in health and for testing of plant nutrition resulting in soil analysis.

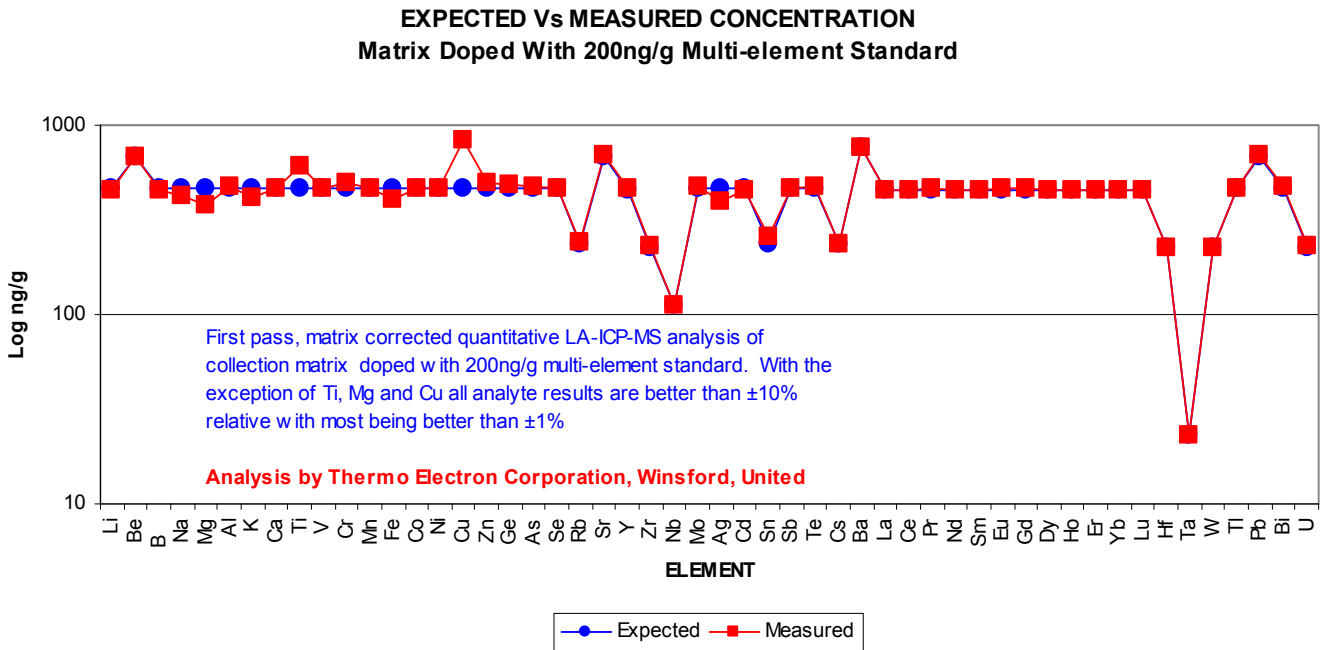
Diakyne has focussed on the Technology’s potential for the human healthcare market. This is because:

- a) Diakyne’s development of innovative technology centred on LA-ICP-MS allows very accurate, cheap and rapid testing of essential elements in fluids at concentrations of less than 20 parts per billion. Testing by an independent laboratory, using Diakyne’s Technology, has **reproduced ‘in house’ results for some 38 essential elements at better than 98% accuracy in metal concentrations of less than 20 parts per billion**; and
- b) Scientific research and popular publication of the consequences of essential element aberrations, has focussed public awareness on their long term impacts on human health.

**Results:**

From a pin prick of blood:

**For 52 elements measured, most give measured values within ±1% of expected values:**





**Comparative advantage:**

	TraceSmart – Diakyne	Existing Technologies
No. of analytes	>50 per sample; simultaneous	Usually <4 per sample
Test Time	<90 seconds per sample	Variable, often several minutes
Sample Volume	30 to 50 $\mu$ L (Single drop)	5 to 10 mL
Preservation	Not required	Required
Sampling	Finger prick, self-acquired or by medical professional	Vein extraction, by Pathology or medical professional
Sampling Device	Retractable, single use lancet	Hypodermic syringe
Comfort	Essentially non-invasive	Invasive, often traumatic
Sampling safety	High, minimal risk	Potential for needle stick injury
Cost	AU\$100 for up to 50 elements	AU\$10 to >AU\$50 per element
Transportation	Absorbed dried sample	Blood filled vials
Sample Prep	None	Significant solution preparation

**Technology in Detail**

Diakyne has a breakthrough technology platform using ‘real-time’ mass spectrometry for very accurate, rapid, simple and cheap analysis of micro-metallic concentrations in fluids. In its primary application, the Diakyne Technology allows for the analysis of essential elements and heavy metal contamination in body fluids for health and medical diagnostics.

The Company is also developing wider applications for its Technology, particularly in the fields of machine wear and tear and also in materials testing (including pharmaceuticals) for purity, as well as plant and soil analysis.

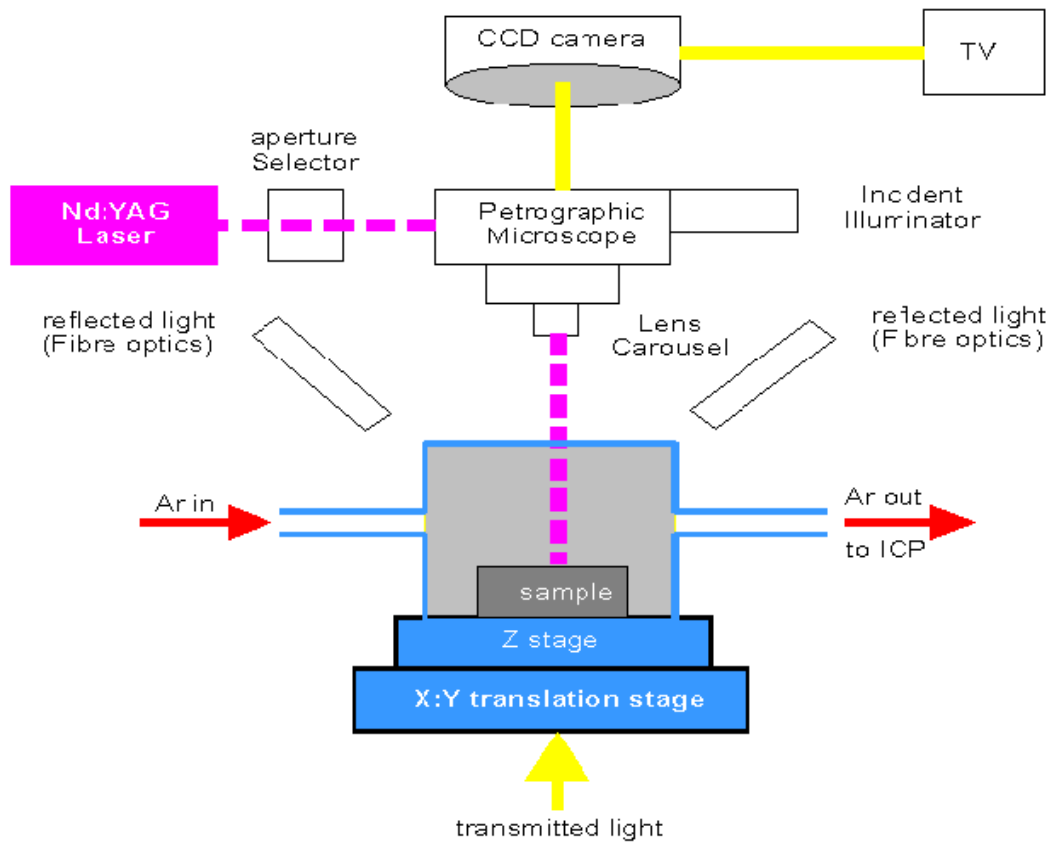
Diakyne’s innovative technology is centred on Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS). With further development it will allow rapid, automated, cost effective mass screening of general populations.

Technology allows the **simultaneous analysis of up to fifty elements from a single blood drop at a cost equivalent to a large number of single element analyses currently being performed by pathology laboratories.** The analysis is performed by processing a chemically unmodified 50-100 microlitre volume of body fluid sample (single drop), absorbed onto Diakyne’s unique sample collection device (an inert collection matrix, patent pending), through a mass spectrometer after vaporising the blood with a high energy laser and ionising the product aerosol in an argon plasma.

Because of the economics of the Technology, it will enable cheap, cost effective mass-screening for disease prevention using trace element discrepancies in individuals as specific disease indicators beyond current tests such as iron deficiencies.

In human diagnostics, the sample collection device, and collection protocol, eliminates the use of hypodermic syringes and, hence, potential for needle stick injuries. It is essentially non-invasive and non-traumatic, and does not involve the preservation, movement and storage of large volumes of blood, urine and other body fluids, or involve large biohazard disposal facilities.

Indeed, in the case of humans, samples may be self-acquired at any geographic location and dispatched to the nearest analytical facility by post or courier. Because an approximately 8,000°C argon plasma is involved in ionisation of the samples, the body fluid products are expected to be largely sterilized during analysis.



## **HOW DOES the COMPLEXITY of DIET FIT IN WITH OUR HEALING?**

Our Healing, which is healing our untrue state, comes first – then our diet. Our Healing is the focus, understanding that as we're dysfunctional on all levels by being unloving to ourselves because of our childhood, then really it's irrelevant what we eat because of the thousands of layers and levels within us that are in denial. This is also explaining why it's so different for each of us. Because we've all had such different upbringings, resulting in different levels of repressed feelings within us. Broadly we can generalise, if we eat too much of this it will have this negative effect on us, however that's not on everyone, with some people eating and doing all the wrong things with seemingly no detrimental effects.

It is our inner that drives the outer. So our inner state, which is hugely complex, drives what foods we are drawn to. And we can try and control our diet using our mind, just as we can try and control any part of ourselves using our mind, however that only adds yet more complications to the already complicated mess.

So we are to focus on ourselves by attending properly to our feelings doing our Healing. And as we progress in our Healing, so our diet will change. And we might go this way and that, all of which brings up yet more bad feelings, all so we can embrace and express and seek the truth of them. With what we eat in the end being taken care of solely by our feelings – we will feel good about what we eat and when we eat it and how much we eat of it, it eventually giving us no further bad feelings, once we've completed our Healing.

So whilst doing our Healing, we can use our mind to look at the effects certain foods have on us so far as what science can determine; we can look at how that food is grown, how its prepared and so on; we can look at every aspect of it, yet all whilst still fully attending to our feelings. And so what one person will want to eat, how much and when, another person might not feel the same way about; even with people possibly going against all the suggested principles of 'what's best for you' worked out scientifically as humanity progresses in its wrongness, and showing no detrimental effects whatsoever.

So you can say, right, no more wheat, no more processed sugar... and see how that makes you feel, looking to the truth of those feelings. And you can say, oh but I can't be bothered going to all the trouble preparing such alternative food, and the added expense, and what am I going to do without bread – how will I survive when bread has always been my main comfort food? All more bad feelings to work with.

And you can say, all right, only raw vegetables, eggs and a bit of cheese, and start the new regime, only to reject it three days later because the chewed vegetables get caught in your throat making you cough and annoying the shit out of you. More bad feelings to accept, express and seek the truth of.

So as with anything through our Healing, we can look to our mind for its control, and try things we determine by it believing they will be helpful to us, all so long as we also keep paying attention to all the bad feelings (and good ones of course) that come up. And the feelings will be stronger, so we'll end up going against what our mind says, provided we want to give up our mind control and live a truly feeling-led life. All of which overall will have an effect upon us and our diet and every other aspect of our life. All initially, whilst we're doing our Healing, to show us the whole truth of our wrongness. And then once Healed, to live being true.

And then as your Healing progresses and you reclaim your will, so it starts working positively and lovingly for you rather than unloving and negatively against you. And suddenly you might feel and know: right, no more red meat, or no more milk, or no more of that dried fruit, or no more of that vegetable, or no more of that chocolate, or even more of that different chocolate and more of those vegetables. And you know it's right for you.

We can either keep living being told by our minds what is the best way for us to live, what are the best foods for us and so on; or we can stop and pay complete attention to our feelings, wanting and allowing them to show us the way we are to be. And by doing our Feeling-Healing we are doing this, all of which is healing all that's wrong within us and preventing us from simply naturally doing it as we should have done had we been allowed to grow up lovingly and without any unloving interference.

So we can try and wrestle it all out with our minds; or, we can look to our feelings instead.

Note from James Moncrief Saturday 13 January 2018

**Live true to your feelings, and you ARE living true, not only to your own soul, but also true to God's soul. So doing your Healing by honouring all your feelings, IS living the will of God. And being fully Healed, IS living even more truly the Will of your Mother and Father.**

**By living true to ourselves, true to our feelings, we are living true to God. It's that simple.**

**Feelings first**

**LIVE FEELINGS FIRST**

**FEELINGS FIRST For Kids**

**MODERN MEDICINE IGNORES OUR SUBTLE BODIES:**

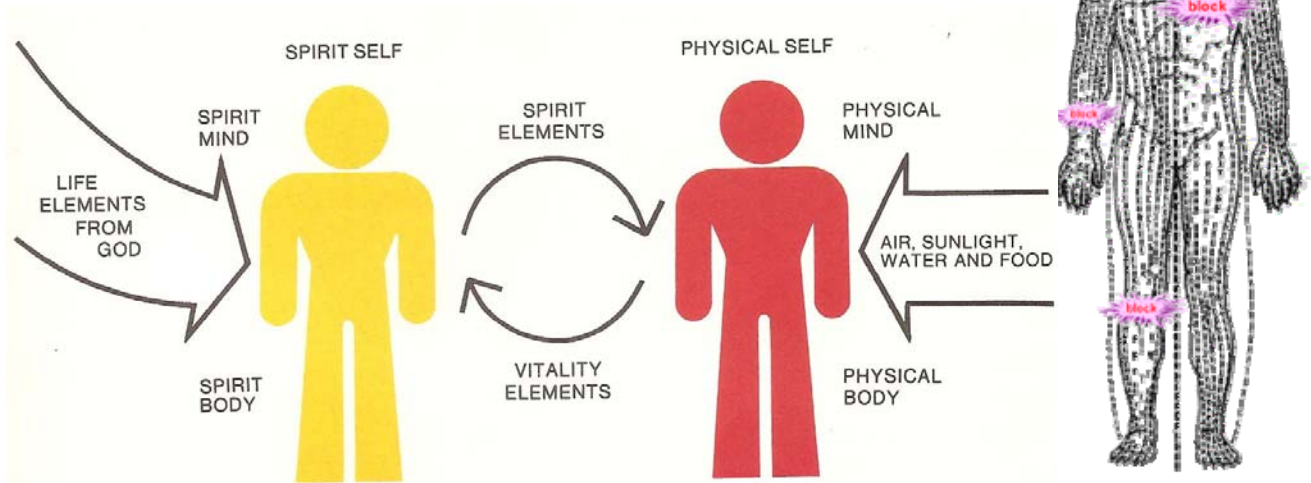
It is the injuries to our subtle bodies caused by our wayward mind that bring about the manifestation of mild discomfort, then acute pain within our physical body, and ultimately the illnesses and diseases that we then seek medical assistance to suppress. Modern medical systems do not address the cause of such illness. Ask yourself, when was the last time that a medical professional told you what the underlying cause of an illness was?

The auric field, that some can see, is the template for our physical body. Childhood Repression brings about energy flow blockages, being stuck and frozen emotional injuries, which then retard the flow of energies within our physical bodies. Modern medicine ignores this reality. The result is that treatments provided are only temporary as the underlying injury remains within our subtle bodies.

We have other bodies that are just as real as the physical body, they are all connected, if we have a problem within these subtle bodies, such problems most likely will manifest on the physical, so why not attend to it utilising a healers help on these subtle levels thereby helping yourself on the physical.

Example, our genes are multi-layered. Our genes are not only part of our physical being but are far reaching. They are:  
 on the physical level  
 on the emotional level  
 on the mental level  
 on the psychic level  
 on the spiritual level.

We need to understand our **genes are not just physical, but on all levels.**



In fact our issues and illness that we recognise within the physical body are on all levels.

Only by one engaging in the process of Feeling Healing can one delve down into the core emotional issues originating from our childhood, being in the form of childhood repression and suppression, that we can then express and release such injuries and bring about permanent health to our physical body. The process of Feeling Healing is the only way to remove the underlying cause of physical illness and discomfort.

<b>Primary recommended reading:</b>	<b>consider commencing with:</b>	<b>Paul – City of Light</b>
<b>The Book of Truths</b>	<b>1914 – 1923</b>	<b>xxx – Joseph Babinsky</b>
<b>containing the Padgett Messages or</b>		
<b>Little Book of Truths</b>		<b>– Joseph Babinsky</b>
<b>True Gospel Revealed anew by Jesus Vol I, II, III, IV</b>	<b>xxx</b>	<b>– Geoff Cutler</b>
<b>The Rejected Ones</b>	<b>2002 – 2003</b>	<b>xxx – James Moncrief</b>
<b>Messages from Mary &amp; Jesus</b>	<b>2003</b>	<b>xxx – James Moncrief</b>
<b>Paul – City of Light</b>	<b>2005</b>	<b>xxx – James Moncrief</b>
<b>Mary Magdalene and Jesus'</b>		
<b>comments on the Padgett Messages</b>	<b>2007 – 2010</b>	<b>xxx – James Moncrief</b>
<b>Speaking with Mary Magdalene &amp; Jesus</b>	<b>2013 – 2014</b>	<b>xxx – James Moncrief</b>
<b>Sage and the Healing Angels of Light</b>	<b>2017</b>	<b>xxx – James Moncrief</b>
<b>Road map of Universe and history of Universe:</b>		
<b>The Urantia Book</b>	<b>1925 – 1935</b>	<b>xxx as primary reading</b>
<b>Divine Love supporting reading:</b>		
<b>Revelations</b>	<b>1954 – 1963</b>	<b>– Dr Daniel Samuels</b>
<b>Judas of Kerioth</b>	<b>2001 – 2003</b>	<b>– Geoff Cutler</b>
<b>The Golden Leaf</b>	<b>2008</b>	<b>– Zara &amp; Nicholas</b>
<b>The Richard Messages</b>	<b>2012 – 2013</b>	<b>– James Reid</b>
<b>The Divine Universe</b>	<b>2012 – 2013</b>	<b>– Zara &amp; Nicholas</b>
<b>Family Reunion Afterlife Contact</b>	<b>2014 – 2015</b>	<b>– Joseph Babinsky</b>
<b>Traveller, An Immortal Journey</b>	<b>2014 – 2015</b>	<b>– Zara &amp; Nicholas</b>
<b>Destiny, Eternal Messages of Divine Love</b>	<b>2015 – 2016</b>	<b>– Zara &amp; Nicholas</b>
<b>Feeling Healing</b>	<b>2017</b>	<b>– James Moncrief</b>
<b>Religion of Feelings</b>	<b>2017</b>	<b>– James Moncrief</b>
<b>The Way of Divine Love</b>		<b>– Joseph Babinsky</b>
<b>Divine Love – The Greatest Truth in the World</b>		<b>– Joseph Babinsky</b>
<b>The Human Soul</b>		<b>– Joseph Babinsky</b>
<b>Divine Love Flowing</b>		<b>– Joseph Babinsky</b>
<b>The Truth</b>		<b>– Werner Voets</b>
<b>Through the Mists, The Life Elysian, The Gate of Heaven</b>		<b>– Robert James Lees</b>
<b>Life in the World Unseen</b>		<b>– Anthony Borgia</b>
<b>Gone West</b>		<b>– J M S Ward</b>
<b>Post Mortem Journal</b>		<b>– Jane Sherwood</b>
<b>After Death / Letters from Julia</b>		<b>– William T Stead</b>
<b>Thirty Years Among the Dead</b>		<b>– Carl A Wickland</b>
<b>A Wanderer in the Spirit Land</b>		<b>– Franchezzo</b>
<b>Life Beyond the Veil Vol I thru to V – Rev George Vale Owen</b>		<b>– Geoff Cutler</b>
<b>The Holy Bible from the Ancient Eastern Text</b>		<b>– Dr George M Lamsa</b>

Available generally from:

[www.lulu.com](http://www.lulu.com)

[www.amazon.com](http://www.amazon.com)

[www.bookdepository.com](http://www.bookdepository.com)

For Divine Love focused websites and forums:

Pascas Health:

<http://www.pascashealth.com/index.php/library.html>

Spiritual Development:

<http://new-birth.net/spiritual-subjects/>

Padgett Books:

<http://new-birth.net/padgetts-messages/>

<http://divinelovesp.weebly.com/my-free-books-and-free-padgett-messages.htm>

**James Moncrief's books, the Padgett Messages and The Urantia Book at:**

**DIVINE LOVE SPIRITUALITY – DLS:**

<http://divinelovesp.weebly.com/my-free-books-and-free-padgett-messages.html>

All Padgett Messages (for condensed versions – see below) 1914 – 1923 Pages 945  
The Urantia Book (see suggested papers to read below)

**James Moncrief Books:**

	MoC		
The Rejected Ones – the Feminine Aspect of God	1,490	Nov 2002 – Jan 2003	228
Messages from Mary and Jesus book 1	1,485	Feb – Apr 2003	189
Messages from Mary and Jesus book 2	1,485	Apr – Oct 2003	170
Mary Magdalene and Jesus' comments on the Padgett Messages – book 1		Aug 2007	164
Messages from 31 May 1914 – 12 January 1915	1,495		
Mary Magdalene and Jesus' comments on the Padgett Messages – book 2		Sep 2010	177
Messages from 13 January 1915 – 29 August 1915	1,494		
Speaking with Mary Magdalene and Jesus blog – book 1	1,490	Jan – Apr 2013	206
Speaking with Mary Magdalene and Jesus blog – book 2	1,489	Apr – May 2013	229
Speaking with Mary Magdalene and Jesus blog – book 3	1,490	Oct – Jan 2014	187
Speaking with Mary Magdalene and Jesus blog – book 4	1,491	Jan – May 2014	191
Mary Magdalene comments on Revelation from the Bible KJV	1,485	Dec 2013 – Jan 2014	84
		This group being pages of	1,825

Paul – City of Light	1,488.5	2005	149
Ann and Terry		2013	235
Feeling bad? Bad Feelings are GOOD!	feeling-healing book 1	2006	179
Feeling bad will make you feel BETTER – Eventually!	feeling-healing book 2	2006	159
Breaking the Golden Rule.	feeling-healing book 3	2006	168
Feeling-Healing exercises, and other healing points to consider.		2009	175
Cathy and Mark – a novel introducing Feeling-Healing.		2010	151
Introduction course to Divine Love Spirituality		2006	139
Speaking with the Dead, Death and Dying		2009	173
Spirits and their Childhood Repression Healing		2010	179
With Verna – a nature spirit		2008	279
Communication with spirits – meet a spirit friend		2010	37
Introduction to Divine Love Spirituality website			362
Sage – and the Healing Angels of Light		2017	260
Divine Love Spirituality	1,500	2017	201
Feeling Healing – you can heal yourself through your feelings		2017	153
Religion of Feelings	1,500	2017	44
		This group being pages of	3,043

**Religion of Feelings**

**Introduction to Divine Love Spirituality**

**Main website of DLS**

**Childhood Repression website**

**DLS and CR forum**

<http://religionoffeelings.weebly.com/>

<http://dls spirituality.weebly.com/>

<http://divinelovesp.weebly.com/>

<http://childhoodrepression.weebly.com/>

<http://dls cr.freeforums.net/>

<http://withmarymagdaleneandjesus.weebly.com/blog---and-free-books-speaking-with-mary-and-jesus>

**FEELING HEALING and SOUL HEALING with the DIVINE LOVE:****James Moncrief Publications:****all publications are free downloads:**<http://divinelovesp.weebly.com/my-free-books-and-free-padgett-messages.html>

It is suggested for one to consider reading as follows:

**Speaking with Mary Magdalene and Jesus – books 1 – 4**

These four books encapsulate the second of the revelations with the first having been introduced by James Padgett one hundred years previously. These four books provide a wide range of guidance that has never previously been made available.

**Paul – City of Light**

As a gentle intro into the Divine Love and Healing; being James Moncrief's first novel and it's been criticised as being too heavily clichéd, but that's the point because it's a reflection of how he was back then.

**Ann and Terry**

For an example of people who might want to immediately start working on themselves and doing their Healing.

**Feeling Bad? Bad Feelings are GOOD**

For more understanding about our denial of our feelings and why we should not deny our feelings, and it includes how it all came about for James, using himself as an example.

**Feeling bad will make you feel BETTER – Eventually!**

This includes specific examples of Marion and James working on expressing particular bad feelings, again with the hope that it will help others gain something of an idea as to what's involved in doing your Feeling Healing.

**Sage – and the Healing Angels of Light**

Through Sage who's 13 years old, the story is primarily about the two aspects of healing; that being, with the help of our angels, and the full Healing we can do by looking to our feelings for their truth.

**Religion of Feelings  
Feeling Healing**

**Welcome to LOVE – the Religion of Feelings  
you can heal yourself through your feelings**

So these books, including the four Speaking with Mary Magdalene and Jesus books, provide the essence of it all and are examples of James' work. Then it's up to whatever takes one's fancy. Other reading to consider may include:

**The Padgett Messages being published as:****The True Gospel Revealed Anew by Jesus volumes 1 – 4****Book of Truths by Joseph Babinsky****The Urantia Book**

**Release one's pain through expressing one's feelings.**

**in conjunction with**

**Longing for the Truth when also longing for Divine Love.**



**FEELING HEALING with DIVINE LOVE is SOUL HEALING:**

*A collection of 'papers' that draw together specific topics including all of the above and more from other sources of information and revelation designed to help increase one's awareness about why we have the problems we do and how to heal them, all whilst living a more healthy and sustainable life. They provide a brief snapshot of the more complicated topics and issues.*

**Firstly, consider discovering the truth of your emotional pain through Feeling Healing.**

**Secondly, consider longing for our Heavenly Parents' Love as you progress with your healing.**

**Primary and most important readings are the writings of James Moncrief.**

**Then consider the Padgett Messages, and then The Urantia Book.**

Pascas Papers, being free, are located within the Library Downloads [www.pascashealth.com](http://www.pascashealth.com)

<http://www.pascashealth.com/index.php/library.html>

**PASCAS – document schedule.pdf      downloadable index to all Pascas Papers.**

FH denotes Feeling Healing; SH denotes Soul Healing, which is: Feeling Healing with the Divine Love; DL denotes Divine Love – living with the Love.

**PASCAS INTRODUCTION NOTES:** *All papers below can be found at Library Downloads link..*

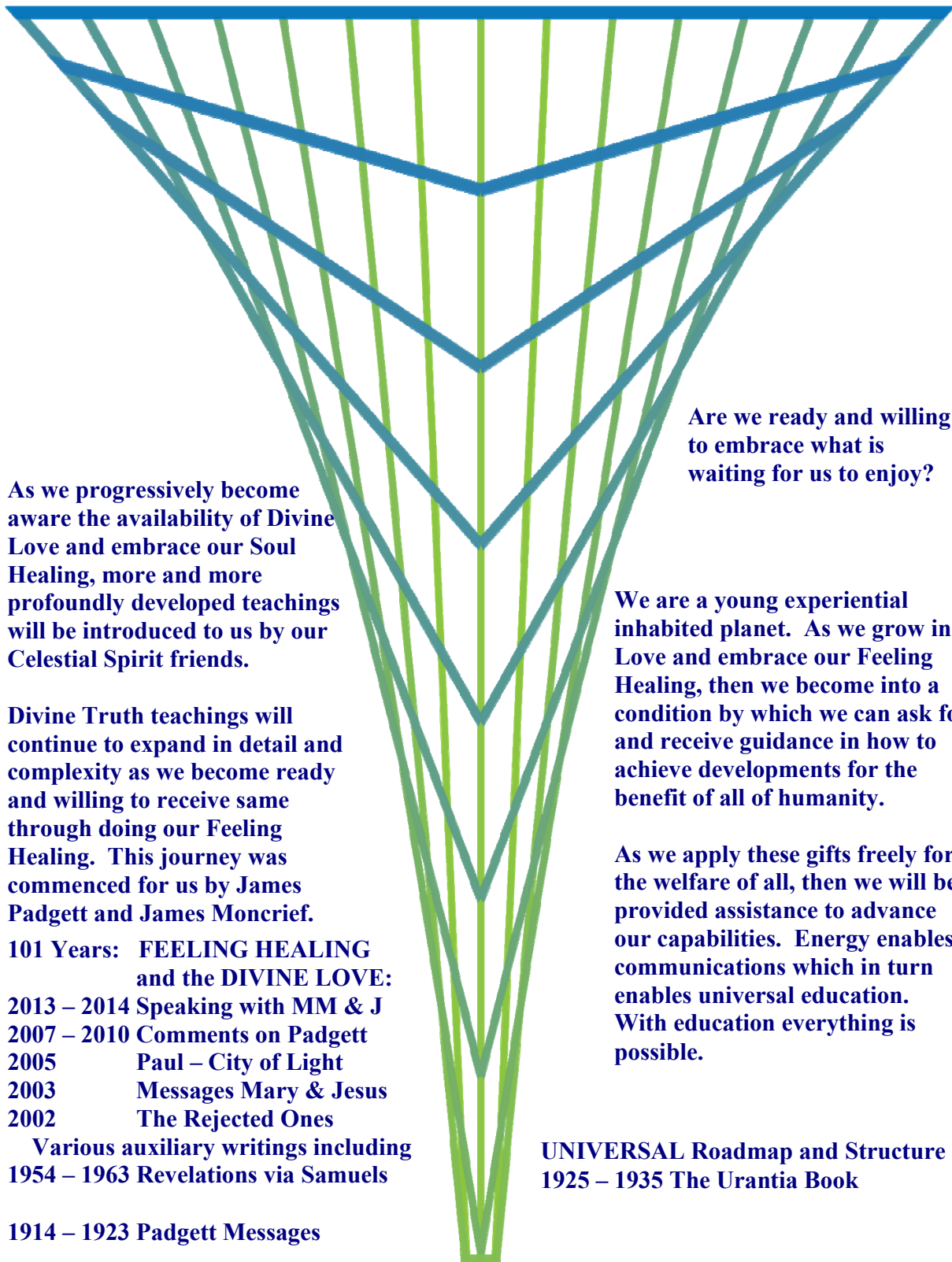
- Pascas Care Letters A Huge Upturn
- Pascas Care Letters Big Revelation
- Pascas Care Letters Feeling Healing Benefits Children
- Pascas Care Letters Feeling Healing Way
- Pascas Care Letters Little Children
- Pascas Care Letters Women's Liberation and Mother

**MEDICAL – EMOTIONS:**

- Pascas Care – Feeling Healing
- Pascas Care – Feeling Healing All is Within
- Pascas Care – Feeling Healing and Health
- Pascas Care – Feeling Healing and History
- Pascas Care – Feeling Healing and Parenting
- Pascas Care – Feeling Healing and Rebellion
- Pascas Care – Feeling Healing and Starting
- Pascas Care – Feeling Healing and Will
- Pascas Care – Feeling Healing Angel Assistance
- Pascas Care – Feeling Healing Being Unloved
- Pascas Care – Feeling Healing Child Control
- Pascas Care – Feeling Healing Childhood Repression
- Pascas Care – Feeling Healing End Times
- Pascas Care – Feeling Healing is Rebelling
- Pascas Care – Feeling Healing Live True
- Pascas Care – Feeling Healing Mary Speaks
- Pascas Care – Feeling Healing My Soul
- Pascas Care – Feeling Healing Perfect State
- Pascas Care – Feeling Healing Revelations X 2
- Pascas Care – Feeling Healing the Future
- Pascas Care – Feeling Healing Trust Yourself
- Pascas Care – Feeling Healing Versus Cult

**PASCAS  
PAPERS**

**DIVINE LOVE and DIVINE TRUTH Revelations and Teachings escalating:**



# ENVIRONMENTAL MEDICINE

