

# Periodic Table of Elements and Major Nutritional Relationships

## Summary of Major Antagonistic Relationships

Antagonistic nutrients work against each other.

The following is a partial list of

- Mineral-mineral antagonists
- Vitamin-mineral antagonists

### Nutritional Element: Antagonists

<b>Calcium (Ca)</b>	Mg, Na, K, Zn, P, Fe, Mn, Be, Cd, Pb, Sr, Vit B1, B2, B3, B5, A
<b>Magnesium (Mg)</b>	Ca, Na, K, P, Fe, Mn, Co, Cd, Pb, Vit B1, B6, B9, B12, C, D, E
<b>Sodium (Na)</b>	Ca, Mg, K, Zn, Vit B2, B3, K
<b>Potassium (K)</b>	Ca, Na, Cu, Co, Li, Vit B1, B9, B12
<b>Copper (Cu)</b>	K, Zn, P, Fe, Se, Mo, S, Hg, Cd, Pb, Ag, Vit B3, B5, B6, A, C
<b>Zinc (Zn)</b>	Ca, Cu, P, Fe, Mn, Cr, Se, Co, Hg, Cd, Pb, Ni, Sn, Vit B1, Inositol, B9, B12, D, E
<b>Phosphorous (P)</b>	Ca, Mg, Cu, Zn, Fe, Mn, Vit D
<b>Iron (Fe)</b>	Ca, Cu, Zn, P, Mn, Cr, Co, Hg, Cd, Pb, Al, V, Sn, Vit B12, D, E
<b>Manganese (Mn)</b>	Ca, Mg, Cu, P, Fe, Cr, Co, Cd, Pb, V, Vit B1, B12, D, E
<b>Chromium (Cr)</b>	Mg, K, Zn, Fe, Mn, Pb, V, Vit B9, B12, D
<b>Selenium (Se)</b>	Cu, Zn, Fe, Mn, S, Hg, As, Cd, Pb, Tl, Sn, F, Ag, Vit B2, C, A, K
<b>Boron (B)</b>	Mg, P, Zn, Vit B2, A
<b>Cobalt (Co)</b>	K, Zn, Fe, Mn
<b>Molybdenum (Mo)</b>	Ca, Cu, S, Hg, W

### Toxic Element: Antagonists

<b>Arsenic (As)</b>	Se, S, Vit E, $\beta$ -carotene
<b>Beryllium (Be)</b>	Ca, S
<b>Mercury (Hg)</b>	Cu, Zn, Fe, Se, S, Vit E, $\beta$ -carotene
<b>Cadmium (Cd)</b>	Cu, Zn, Fe, Mn, Se, S, Vit C
<b>Lead (Pb)</b>	Ca, Mg, Cu, Zn, Fe, Mn, Se, S, Vit C
<b>Aluminium (Al)</b>	Fe, Vit C

Metals											Non Metals												
Alkaline earth metals		Lanthanoids		Transition metals		Alkali metals		Actinoids		Post transition metals		Metalloids	Noble gases		Other nonmetals		Halogens						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18						
1 <b>H</b> Hydrogen 1.00794																	2 <b>He</b> Helium 4.002602						
3 <b>Li</b> Lithium 6.941	4 <b>Be</b> Beryllium 9.012182																	5 <b>B</b> Boron 10.811	6 <b>C</b> Carbon 12.0107	7 <b>N</b> Nitrogen 14.0067	8 <b>O</b> Oxygen 15.9994	9 <b>F</b> Fluorine 18.9984032	10 <b>Ne</b> Neon 20.1797
11 <b>Na</b> Sodium 22.98976928	12 <b>Mg</b> Magnesium 24.3050																	13 <b>Al</b> Aluminium 26.9815386	14 <b>Si</b> Silicon 28.0855	15 <b>P</b> Phosphorus 30.973762	16 <b>S</b> Sulfur 32.065	17 <b>Cl</b> Chlorine 35.453	18 <b>Ar</b> Argon 39.948
19 <b>K</b> Potassium 39.0983	20 <b>Ca</b> Calcium 40.078	21 <b>Sc</b> Scandium 44.955912	22 <b>Ti</b> Titanium 47.867	23 <b>V</b> Vanadium 50.9415	24 <b>Cr</b> Chromium 51.9961	25 <b>Mn</b> Manganese 54.938045	26 <b>Fe</b> Iron 55.845	27 <b>Co</b> Cobalt 58.933195	28 <b>Ni</b> Nickel 58.6934	29 <b>Cu</b> Copper 63.546	30 <b>Zn</b> Zinc 65.38	31 <b>Ga</b> Gallium 69.723	32 <b>Ge</b> Germanium 72.64	33 <b>As</b> Arsenic 74.9216	34 <b>Se</b> Selenium 78.96	35 <b>Br</b> Bromine 79.904	36 <b>Kr</b> Krypton 83.798						
37 <b>Rb</b> Rubidium 85.4678	38 <b>Sr</b> Strontium 87.62	39 <b>Y</b> Yttrium 88.90585	40 <b>Zr</b> Zirconium 91.224	41 <b>Nb</b> Niobium 92.90638	42 <b>Mo</b> Molybdenum 95.96	43 <b>Tc</b> Technetium (97.9072)	44 <b>Ru</b> Ruthenium 101.07	45 <b>Rh</b> Rhodium 102.90550	46 <b>Pd</b> Palladium 106.42	47 <b>Ag</b> Silver 107.8682	48 <b>Cd</b> Cadmium 112.411	49 <b>In</b> Indium 114.818	50 <b>Sn</b> Tin 118.710	51 <b>Sb</b> Antimony 121.760	52 <b>Te</b> Tellurium 127.60	53 <b>I</b> Iodine 126.90447	54 <b>Xe</b> Xenon 131.293						
55 <b>Cs</b> Caesium 132.90545196	56 <b>Ba</b> Barium 137.327	57 <b>La</b> Lanthanum 138.90547	72 <b>Hf</b> Hafnium 178.49	73 <b>Ta</b> Tantalum 180.94788	74 <b>W</b> Tungsten 183.84	75 <b>Re</b> Rhenium 186.207	76 <b>Os</b> Osmium 190.23	77 <b>Ir</b> Iridium 192.217	78 <b>Pt</b> Platinum 195.084	79 <b>Au</b> Gold 196.966569	80 <b>Hg</b> Mercury 200.59	81 <b>Tl</b> Thallium 204.3833	82 <b>Pb</b> Lead 207.2	83 <b>Bi</b> Bismuth 208.98040	84 <b>Po</b> Polonium (209)	85 <b>At</b> Astatine (209)	86 <b>Rn</b> Radon (222)						
87 <b>Fr</b> Francium (223)	88 <b>Ra</b> Radium (226)	89 <b>Ac</b> Actinium (227)	104 <b>Rf</b> Rutherfordium (261)	105 <b>Db</b> Dubnium (262)	106 <b>Sg</b> Seaborgium (266)	107 <b>Bh</b> Bohrium (264)	108 <b>Hs</b> Hassium (277)	109 <b>Mt</b> Meitnerium (268)	110 <b>Ds</b> Darmstadtium (271)	111 <b>Rg</b> Roentgenium (272)	112 <b>Uub</b> Ununbium (285)	113 <b>Uut</b> Ununtrium (284)	114 <b>Uuq</b> Ununquadium (289)	115 <b>Uup</b> Ununpentium (288)	116 <b>Uuh</b> Ununhexium (292)	117 <b>Uus</b> Ununseptium	118 <b>Uuo</b> Ununoctium (294)						
		58 <b>Ce</b> Cerium 140.116	59 <b>Pr</b> Praseodymium 140.90765	60 <b>Nd</b> Neodymium 144.242	61 <b>Pm</b> Promethium (145)	62 <b>Sm</b> Samarium 150.36	63 <b>Eu</b> Europium 151.964	64 <b>Gd</b> Gadolinium 157.25	65 <b>Tb</b> Terbium 158.92535	66 <b>Dy</b> Dysprosium 162.500	67 <b>Ho</b> Holmium 164.93032	68 <b>Er</b> Erbium 167.259	69 <b>Tm</b> Thulium 168.93421	70 <b>Yb</b> Ytterbium 173.054	71 <b>Lu</b> Lutetium 174.9668								
		90 <b>Th</b> Thorium 232.03806	91 <b>Pa</b> Protactinium 231.03588	92 <b>U</b> Uranium 238.02891	93 <b>Np</b> Neptunium (237)	94 <b>Pu</b> Plutonium (244)	95 <b>Am</b> Americium (243)	96 <b>Cm</b> Curium (247)	97 <b>Bk</b> Berkelium (247)	98 <b>Cf</b> Californium (251)	99 <b>Es</b> Einsteinium (252)	100 <b>Fm</b> Fermium (257)	101 <b>Md</b> Mendelevium (258)	102 <b>No</b> Nobelium (259)	103 <b>Lr</b> Lawrencium (262)								

NB: Imbalances between nutrients are much more common than deficiencies of individual nutrients. In some circumstances certain nutrients can antagonise a particular nutrient, and in others can enhance utilisation of that particular nutrient. These relationships may be direct or indirect. Many relationships are mutual, but not all.

Sources for Antagonistic and Synergistic Relationships: Watts, DL. 2006. Trace Elements and Other Essential Nutrients. 5th ed. and research conducted by Trace Elements Inc.

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## Summary of Major Synergistic Relationships

Synergistic nutrients work together, in co-operation with each other.

The following is a partial list of

- Mineral-mineral synergists
- Vitamin-mineral synergists

### Nutritional Element: Synergists

<b>Calcium (Ca)</b>	Mg, Na, K, Cu, P, Se, B, Sr, Si, Vit A, E, C, D
<b>Magnesium (Mg)</b>	Ca, K, Zn, P, Mn, Cr, Vit B1, B2, B3, B6, A, C, E
<b>Sodium (Na)</b>	Ca, K, Cu, P, Se, Co, Vit B1, B6, D, E
<b>Potassium (K)</b>	Mg, Na, Zn, P, Fe, Mn, Co, Vit B2, A
<b>Copper (Cu)</b>	Ca, Na, Fe, Se, Co, Vit D, B1, B12, C, B9
<b>Zinc (Zn)</b>	Mg, K, P, Cr, Mn, Vit B1, B3, B5, B6, A, E
<b>Phosphorous (P)</b>	Ca, Mg, Na, K, Zn, Fe, Cr, Vit A
<b>Iron (Fe)</b>	Na, K, Cu, P, Mn, Cr, Se, Vit E, B1, B2, B3, B6, B12, C, A
<b>Manganese (Mn)</b>	Mg, K, Zn, P, Fe, Vit B1, B3, B5, B6, A, E
<b>Chromium (Cr)</b>	Mg, K, Zn, Vit B1, B2, B3, B6, A, E
<b>Selenium (Se)</b>	Ca, Na, K, Cu, Fe, Mn, Co, Vit B1, B6, A, C, D, E
<b>Molybdenum (Mo)</b>	Ca, Cu, Na, Fe, Se, Co, Vit D, B1, B12, C, B9

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# Conditions associated with absolute or relative mineral deficiencies

Practitioner Only Reference Material

MINERAL	CONDITIONS			
<b>Calcium</b>	Allergies (histamine) (A)	Osteoporosis (Type1) (A)	Hyperadrenia (A)	Vitamin A excess (A)
	Muscle cramps (A)	Hyperthyroidism (A)	Anxiety (A)	High blood pressure (A)
	Hypoparathyroidism (A)	Vitamin D deficiency (A)	Hyperactivity (A)	Insomnia (Type 1) (A)
<b>Magnesium</b>	Hyperactivity (A)	Seizures (A)	Colitis (R)	Alcoholism (A)
	Noise sensitivity (A-R)	Epilepsy (A)	Diverticulosis (R)	Adrenal hyperactivity (A)
	Allergies (histamine) (A)	Renal dysfunction (A-R)	Arteriosclerosis (A-R)	Excessive perspiration (A)
	Hyperthyroidism (A)	Parathyroid dysfunction (A-R)	Diabetes (A-R)	Cardiovascular disease (A-R)
<b>Potassium</b>	Adrenal insufficiency (A)	Hypochlorhydria (A)	Hypothyroidism (A-R)	Transient hypertension (A)
	Parasympathetic dominance (A)	Poor digestion (A)	Fatigue (A-R)	Carpopedal spasms (A)
	Hyperparathyroidism (A)	Acne (A)	Hypoglycaemia (A-R)	Cardiac irregularity (A-R)
<b>Iron</b>	Anaemia (A)	Attention deficit disorder (A)	Hypochlorhydria (A)	Neurotransmitter disturbance (A)
	Palpitations (A)	B6 deficiency (A-R)	Fatigue (A)	Toxic metal accumulation (A)
	Low protein intake (A)	Pica (A)	Hypothyroidism (A)	Stomatitis (A)
	Immunodeficiency (A)	Glossitis (A)	Splitting nails (A)	Candida (A)
<b>Copper</b>	Osteoporosis (Type 1) (A)	Disc degeneration (A-R)	Rheumatoid Arthritis (A)	Iron toxicity (A-R)
	Hypercholesterolaemia (A)	Anaemia (A-R)	Infections (bacterial) (A)	Toxic metal accumulation (A)
	Hypoestrogenism (A-R)	Inflammation (A)	Premature ventricular contraction (A)	Sympathetic dominance (A)
<b>Manganese</b>	Glucose intolerance (A)	Anaemia (A)	Fatigue (A-R)	Weight loss (A)
	Osteochondrosis (A)	Iron toxicity (A-R)	Hypercholesterolaemia (A)	Adrenal insufficiency (A)
<b>Zinc</b>	PMS (R)	Anorexia (R)	Post-partum depression (R)	Autism (R)
	Viruses (R)	Fungal infection (A-R)	AIDS (R)	Sterility (A-R)
	Yeast infection (Candida) (R)	Arthritis (R)	Eclampsia (R)	Gastric ulcers (R)
	Diabetes (A-R)	Peptic ulcers (A)	Prostate hypertrophy (A)	Macular degeneration (A)
	Sickle Cell anaemia (R)	Poor wound healing (A-R)	Lowered immunity (A-R)	Stretch marks (A-R)
	White spots on fingernails (R)	Anosmia (A)	Hypogeusia (A)	Slow growth (A-R)
<b>Chromium</b>	Diabetes (A-R)	Glucose intolerance (A-R)	Peripheral neuropathy (A)	Slow growth (A)
	Hypercholesterolaemia (A-R)	Atherosclerosis (A-R)	Glycosuria (A)	Low respiratory quotient (A)
<b>Molybdenum</b>	Dental cavities (A)	Bronchial asthma (A-R)	Sulfite sensitivity or allergy (A-R)	Wilson's disease (A-R)
	Oesophageal cancer (A)			
<b>Selenium</b>	Cataracts (A)	Chronic inflammatory conditions (A)	Anaemia (A)	Lowered Immunity (A)
	Hypothyroidism (A)	Cardiomyopathy (A)		

## Absolute (A) deficiency :

Develops as a result of decreased absorption with increased excretion.

## Relative (R) deficiency :

Develops as a result of compartmental displacement without an increase in excretion.

SOURCE: Based on current literature and research conducted by Dr David Watts, Trace Elements Inc.

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