

Hair Tissue Mineral Analysis / Nutritional, Herbal and Natural Medicine / Practitioner Education



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) [The Role of Chromium in Blood Sugar Control](#)

## The role of chromium in blood sugar control

Alkaline earth metals		Lanthanoids			Transition metals			Alkali metals		Actinoids		Rare 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 H Hydrogen 1.008	2 He Helium 4.003																	3 Li Lithium 6.941	4 Be Beryllium 9.012	5 B Boron 10.811	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180	11 Na Sodium 22.990	12 Mg Magnesium 24.305	13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.065	17 Cl Chlorine 35.453	18 Ar Argon 39.948	19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.883	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.630	33 As Arsenic 74.922	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.80	37 Rb Rubidium 85.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.94	43 Tc Technetium 98.906	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.905	46 Pd Palladium 106.36	47 Ag Silver 107.868	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.757	52 Te Tellurium 127.6	53 I Iodine 126.905	54 Xe Xenon 131.29	55 Cs Cesium 132.905	56 Ba Barium 137.327	57 La Lanthanum 138.905	58 Ce Cerium 140.12	59 Pr Praseodymium 140.908	60 Nd Neodymium 144.24	61 Pm Promethium 144.913	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.925	66 Dy Dysprosium 162.50	67 Ho Holmium 164.930	68 Er Erbium 167.259	69 Tm Thulium 168.930	70 Yb Ytterbium 173.054	71 Lu Lutetium 174.967	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.222	78 Pt Platinum 195.084	79 Au Gold 196.967	80 Hg Mercury 200.59	81 Tl Thallium 204.383	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium 209	85 At Astatine 210	86 Rn Radon 222	87 Fr Francium 223	88 Ra Radium 226	89 Ac Actinium 227	90 Th Thorium 232.038	91 Pa Protactinium 231.036	92 U Uranium 238.029	93 Np Neptunium 237.048	94 Pu Plutonium 244.064	95 Am Americium 243.061	96 Cm Curium 247.07	97 Bk Berkelium 247.07	98 Cf Californium 251.08	99 Es Einsteinium 252.083	100 Fm Fermium 257.10	101 Md Mendelevium 258.10	102 Ds Darmstadtium 261.10	103 Rg Roentgenium 262.10	104 Uu Ununquadium 263.10	105 Uub Unbibium 264.10	106 Uuq Untrium 265.10	107 Uup Unpentium 266.10	108 Uuh Unhexium 267.10	109 Uus Unseptium 268.10	110 Uuq Unoctium 269.10	111 Uue Unennium 270.10	112 Uub Unbinilium 271.10	113 Uut Untrium 272.10	114 Uuq Unquadrium 273.10	115 Uup Unpentium 274.10	116 Uuh Unhexium 275.10	117 Uus Unseptium 276.10	118 Uuo Unoctium 277.10

Chromium was originally discovered by Frenchman Louis-Nicholas Vauquelin in 1797. The word "chroma" means colour and reflects the colourful range of chromium compounds Vauquelin observed. In 1959 chromium was discovered to be an essential nutrient with an important physiological role as a constituent of the glucose tolerance

factor (GTF). It works synergistically with insulin in promoting the uptake of glucose into cells.

In this month's eNews we look at chromium and the role it plays in diabetes, glucose and cholesterol control.

## InterClinical Update



### **Effect of chromium supplementation on glycated haemoglobin and fasting plasma glucose in patients with diabetes mellitus.**

Diabetes glycaemic control is an essential component of diabetic maintenance. Poor diabetic control of diabetes mellitus (T2DM) can lead to

hypertension, high cholesterol, elevated glycated haemoglobin and an increased risk of developing nephropathic and atherosclerotic changes.<sup>(1,2)</sup> Diabetes also causes changes to the manner in which fatty acids are metabolised resulting in elevated low density lipids, triglycerides and lower high density lipids. Cholesterol and fatty acid markers are appropriate parameters for inclusion when assessing diabetes status.

This meta-analysis evaluated placebo-controlled randomised clinical trials which examined the influence of chromium supplementation on fasting blood sugar, insulin and cholesterol in pharmacologically-managed diabetics. Specific markers tested included: diastolic and systolic blood pressure, fasting blood sugar, glycated haemoglobin, fasting insulin and a full array of cholesterol markers. These included: high density lipoprotein HDL-C, low density lipoprotein (LDL), total cholesterol (TC) and triglycerides (TG).<sup>(2)</sup>

Twenty eight randomised clinical trials met the eligibility criteria. The studies were similar enough for the data to be pooled and the participants totalled 1,295. Average age of the participants per trial ranged from 36 to 83 years.

Ten studies used chromium picolinate, eight used chromium chloride and two utilised chromium complexed with nicotinic acid. Four used a food source of chromium - brewer's yeast. Study durations varied from 6 to 24 weeks with a median duration of 13.75 weeks. Study doses varied depending on the form of chromium used, but the majority of the chromium chloride studies used a dose of 200 mcg per day. All studies were assessed as good quality with a low risk of bias.<sup>(2)</sup>

The review found that chromium supplementation significantly lowered fasting blood sugar levels by 0.99 mmol/L ( $P = 0.008$ ), lowered glycated haemoglobin by 0.54% ( $P = 0.0002$ ) and lowered triglycerides by 11.71 mg/dL ( $P = 0.0006$ ) whilst raising beneficial HDL-C cholesterol levels by 1.73 mg/dL ( $P < 0.006$ ) in T2DM when compared to placebo.<sup>(2)</sup> Insulin and blood pressure marker changes were non-significant.

Chromium chloride and chromium picolinate performed more favourably than the other forms, regardless of dose. The authors concluded that chromium supplementation may be a candidate as a possible adjunct therapy in the management of medically diagnosed Type Two diabetics' management plans <sup>(2)</sup>

## References

1. Yeap BB, McCaul KA, Flicker L, Hankey GJ, Almeida OP, Golledge J, Norman PE. Diabetes, myocardial infarction and stroke are distinct and duration-dependent predictors of subsequent cardiovascular events and all-cause mortality in older men. *The Journal of Clinical Endocrinology & Metabolism*. 2015 Mar 1;100(3):1038-47.
2. Yin RV, Phung OJ. Effect of chromium supplementation on glycated haemoglobin and fasting plasma glucose in patients with diabetes mellitus. *Nutrition Journal*. 2015;14:14.

## RECENT EVENTS



### **Report on ACNEM Training (29th-30th July 2017) Novotel Brisbane, QLD**

The Australasian College of Nutritional and Environmental Medicine (ACNEM) Environmental Health module was a fantastic two day

program designed for GPs, Registrars and other graduate healthcare professionals to educate practitioners on the recognition of environmental toxins, their effect on human health and how a patient affected by them may present to you in clinical practice.

This module gave an overview of the major toxins, signs and symptoms of exposure, and identification of clinical testing available. Practical solutions to minimising patient exposure, and specific treatment strategies to improve health outcomes were given.

InterClinical always enjoys being a part of ACNEM and their training programs. We proudly showcased our products and services designed to assist you to help your patients. It was fantastic to see lots of familiar faces as well as meet new ones.





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