

Chlorella

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CGF - optimal facial development, optimal skeletal growth and development of intelligence:
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 - R.Pratt et al :Production of thiamine, riboflavin, folic acid and biotin by chlorella vulgaris und chlorella pyrenoidosa J of Pharmaceutical Sciences Vol 54, No.6, June 1965 – chlorella contains significant amounts of: Vit B2, B3, Methyl B12, D-3, Vit K, Vit C, Vit E, Beta Carotin and other Carotinoids, all essentiell Aminoacid, Magnesium, Eisen, Kalium, Chlorophyll
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- CGF in adults: hGH (human Growth hormone):
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Chlorella in cancer therapy

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- Kuniaki, T.; Yoshifumi, T.; Tsuruta, M. et al: Oral administration of chlorella vulgaris augments concomitant anti-tumour immunity. *Immunopharmacology and Immunotoxicology*, 12 (2): 277-291, 1990.
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CVE: infections and lead

- CVE: treatment of intestinal infections (Listeria, pathogenic e.coli and CMV) and lead toxicity:

Hasegawa, T./ Okuda, M./ Nomoto, K., et al.:
Augmentation of the resistance against Listeria monocytogenes by oral administration of hot water extract of chlorella vulgaris in mice.
Immunopharmacology and Immunotoxicology,
16(2): 191-202, 1994

Protective effects of Chlorella vulgaris extract (CVE[®]) in lead-exposed mice infected with Listeria monocytogenes

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Chlorella vulgaris extract (CVE) was examined for its chelating effects on the myelosuppression induced by lead in *Listeria monocytogenes*-infected mice. The reduction in the number of bone marrow granulocyte-macrophage progenitors (CFU-GM) observed after the infection was more severe in the groups previously exposed to lead. Extramedullar hematopoiesis, which was drastically increased after the infection, was not altered by the presence of lead. Treatment with CVE, given simultaneously or following lead exposure, restored to control values the myelosuppression observed in infected/lead-exposed mice and produced a significant increase in serum colony-stimulating activity. The benefits of the CVE treatment were also evident in the recovery of thymus weight, since the reduction produced by the infection was further potentiated by lead exposure. The efficacy of CVE was evident when infected and infected/lead-exposed mice were challenged with a lethal dose of *L. monocytogenes* after a 10-day treatment with 50 mg/kg CVE/day, given simultaneously to the exposure to 1300 ppm lead acetate in drinking water. Survival rates of 30% for the infected group and of 20% for the infected/lead-exposed groups were observed. Evidence that these protective effects of CVE are partly due to its chelating effect was given by the changes observed in blood lead levels. We have observed in the group receiving the CVE/lead simultaneous exposure a dramatic reduction of 66.03% in blood lead levels, when compared to lead-exposed nontreated control. On the other hand, CVE treatment following lead exposure produced a much less effective chelating effect. CVE treatments for 3 or 10 days, starting 24 h following lead exposure, produced a reduction in blood lead levels of 13.5% and 17%, respectively, compared to lead-exposed nontreated controls. The significantly better response observed with the simultaneous CVE/lead administration indicates that the immunomodulation effect of CVE plays an important role in the ability of this algae to reduce blood lead levels. In this regard, additional experiments with gene knockout C57BL/6 mice lacking a functional IFN-gamma gene demonstrated that this cytokine is of paramount importance in the protection afforded by CVE. The antibacterial evaluation measured by the rate of survival demonstrated that, in face of a 100% survival in the control group composed of normal C57BL/6 mice, which are resistant to *L. monocytogenes*, we observed no protection whatsoever in the IFN-gamma knockout C57BL/6 mice treated with CVE and inoculated with *L. monocytogenes*.

PMID: 12781705 [PubMed - in process]

Chlorella Safety

- 500 Gramm Chlorella per day in experiment without serious side effects except bloatedness (Algae Feeding in Humans R.Powell et al, J of Nutrition 75: 61, pg 7-12). Exempt in Japan from necessity of further safety studies
- NIN report: no LD 50 in rats
- South Korea: 4000 tons of chlorella used annually by humans without reports of worrisome side effects

Chlorella membrane

- (Bohumil Voelsky: Biosorption of Heavy Metals. CRC Press, 1990)
- Hemizellulose A and B
- C. P membrane contains Sporopollenin, not C.V
- Membrane contains carotenoids, polyphenols and more
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Chlorella and Metal Binding

Cadmium

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Uranium

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Lead

- Protective effects of chlorella vulgaris in lead exposed mice infected with *Listeria monocytogenes*
M.Queiroz et al *International Immunopharmacology* 3 (2003) 889-900

Mercury

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Erfahrungsheilkunde Band 48, Heft 7, Juli 1999
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Chlorella and Chemical Detox

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The Randall Merchant PhD Studies

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Chlorella in pregnant and breastfeeding mothers

- Effect of chlorella pyrenoidosa on fecal excretion and liver accumulation of polychlorinated dibenzo-p-dioxin in mice
Chemosphere 2005;59 297-304
- Maternal-fetal distribution and transfer of dioxins in pregnant women in Japan, and attempts to reduce maternal transfer with Chlorella (Chlorella pyrenoidosa) supplements
S.Nakano et al Chemosphere, April 2005
- Chlorella Pyrenoidosa supplementation decreases Dioxin and increases Immunoglobulin A concentrations in breast milk
Shiro Nakano et al J Med Food 10 (1) 2007, 134-142).

Chlorella optimizes lipids

- A hot water extract of chlorella pyrenoidosa reduces body weight and serum lipids in ovariectomized rats S.Hidaka et al
Phytotherapy Research 18 (2004) 164-168
- Effect of Chlorella on the level of serum cholesterol in rats C-J Wang et al, J Formosan Med Assoc 80 (1981) 929-933)

Cilantro

- “Removal and preconcentration of inorganic and methyl mercury from aqueous media using a sorbent prepared from the plant *Coriandrum sativum*”

D. Karunasagar*, M.V. Balarama Krishna, S.V. Rao, J. Arunachalam

(National Center for Compositional Characterization of Materials (CCCM), Bhabha Atomic Research Centre)

Journal of Hazardous Materials B118 (2005) 133–139

Preventative Effects of Chinese Parsley on Aluminum Deposits in ICR Mice

Acupuncture & Electro-Therapeutics Research 28 (1/2) 1-44 (2003)

82 ABSTRACTS: 18TH ANNUAL INTL. SYMPOSIUM ON ACUPUNCTURE & ELECTRO-THERAPEUTICS

Preventive Effect of Chinese Parsley (*Coriandrum sativum*, Cilantro) on Aluminum Deposition in ICR Mice

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ABSTRACT

[Purpose] Environmental exposure to Al may present a serious risk to human because it is the most abundant metal in the Earth's crust. It induces disturbances in the functions of the nervous, osseous and erythropoietic systems (1).

Dr. Omura discovered that the accumulation of mercury in tissues, particularly in cell nucleus, may be one of the main causes of cancer and he found that these metal deposits can be removed by using Chinese parsley and Omura's Selective Drug Uptake Enhancement Method (2-5). We previously reported about the scavenging effect of Chinese parsley on localized lead deposition in animal model (6). In this report, the preventive effect of Chinese parsley on aluminum (Al) deposition in male ICR mice exposed to Al is described.

[Materials and Methods] Seven weeks old ICR male mice were exposed to 1000 ppm Al as Al chloride in drinking water for 39 days. Administration of Chinese parsley to mice by gastric intubation was performed for 25 days from 14 days after beginning of Al exposure to the end of experiment. After 39 days, the mice were sacrificed for the comparison of Al distribution. The localized Al in various tissues was analyzed by kinetic differentiation mode of HPLC.

[Results] The total dose of Al given to each experimental group of mice was approximately 200mg. During the experimental period, all the animals gained weight and no differences were found. There were no symptoms of neurotoxicity or other abnormalities. After Al exposure, Al was found to accumulate in the brain, kidney and femur. The highest concentration of Al was observed in the femur. Localized Al deposition in brain was significantly decreased by the administration of

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2.4mg/body of Chinese parsley as shown in Fig.1. The similar results were obtained in femur (Fig.2). Surprisingly, Al levels in femur on Chinese parsley administered group were lower than that on control. It was supposed that the metal deposition may be removed by the administration of Chinese parsley.

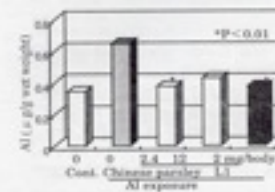


Fig.1 Effect of Chinese parsley on Al concentration in the brain

1,3-bis(2-dimethyl-3-hydroxypropyl-4-one): a chelating agent used for positive control

[Conclusion] Orally administered Chinese parsley is effective at reducing the deposition of Al in the tissues. These findings suggest the possibility that Chinese parsley may be useful as a natural antidote for Al intoxication.

[References]

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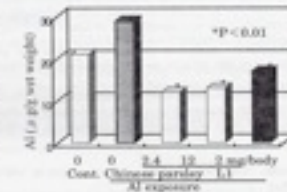


Fig.2 Effect of Chinese parsley on Al concentration in the femur

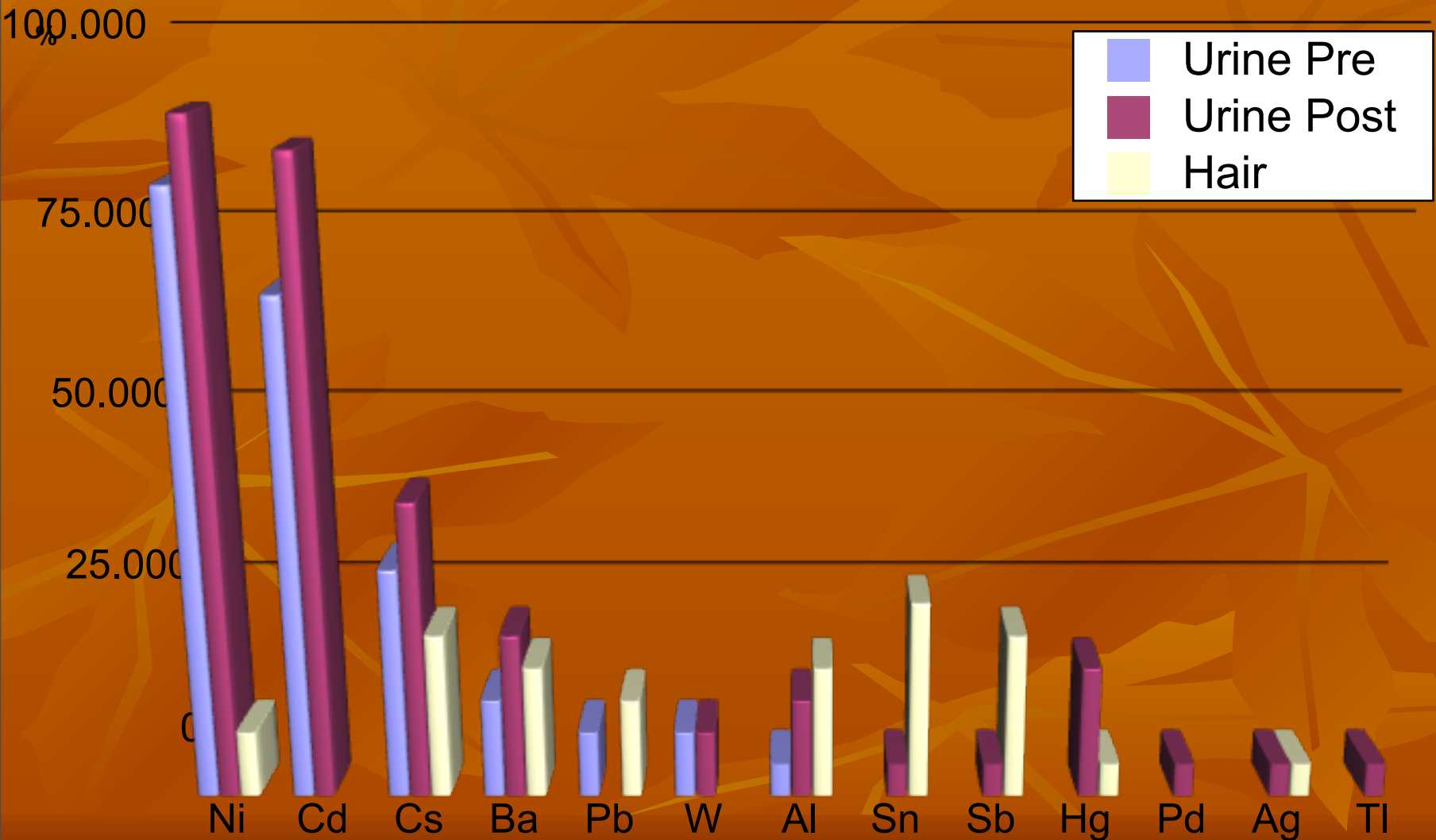
Cilantro, metals and EMF sensitivity

- Preliminary research data from Margaretha Griesz-Brisson MD, PhD

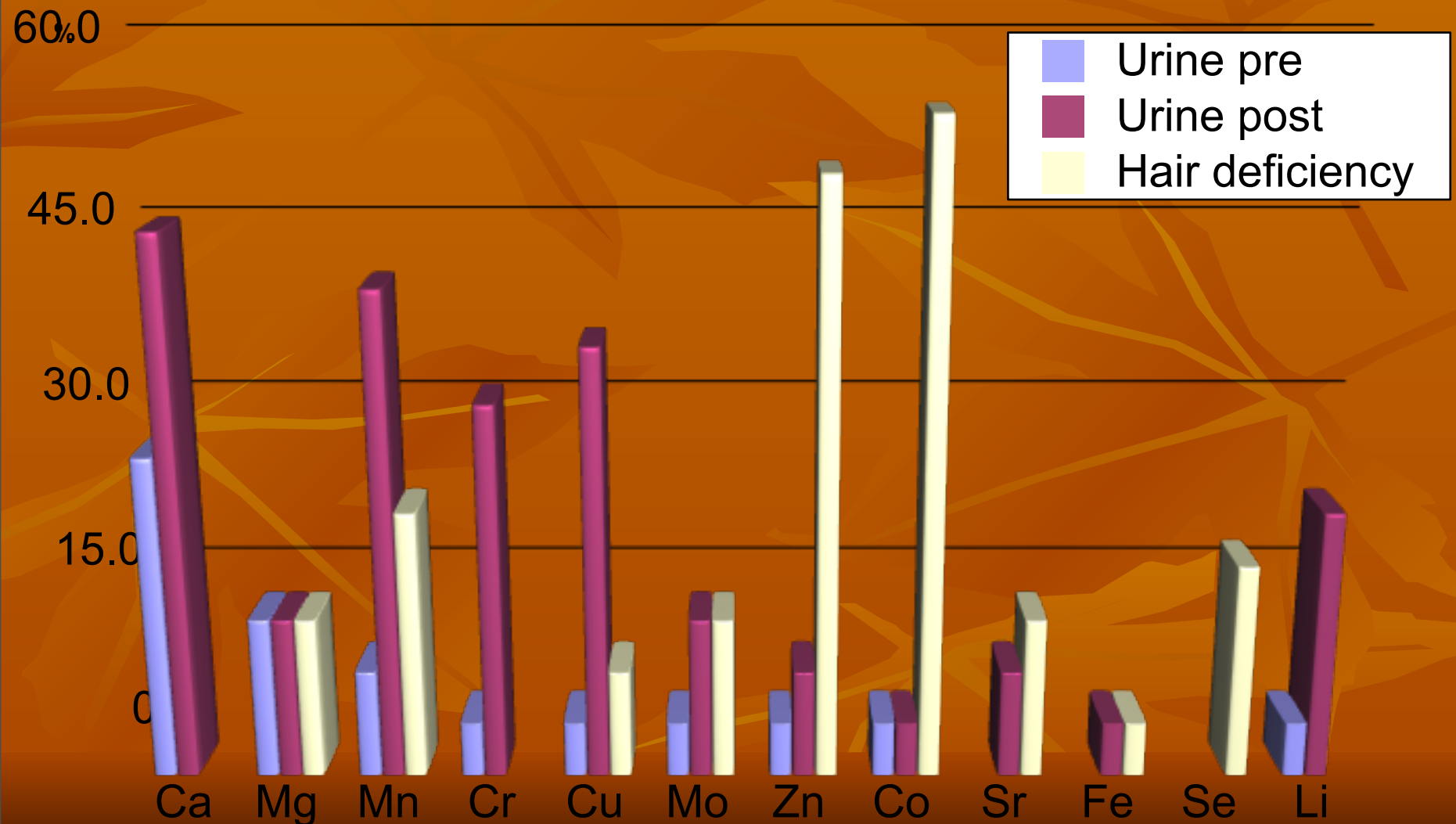
Metal ions in urine and hair before and after cilantro provokation

Hair	Urine pre-	Urine post
Zn-, Ca+, Mg+, Sr+, Sb+, Ba+, Ni+,	Se-, Ca+, Pb+, Cd+, Ni+,	Ca+, Cu+, Mn+, Zn+, Al+, Ba+, Cd+, Pd+, Hg+, Li+, Sr+
	Se-, Cu+, Mn+, Zn+, Ba+, Pb+, Cd +, Ni+, Li+	Se-, Fe-, Cr+, Cu+, Mn+, Cs+, Cd+, Ni+, Li+
Zn-, Mg+, Al+, Ag+	Mg+, Cs+, Cd+, Ni+	Ca+, Mg+, Cr+, Cu+, Mn+, Mo+, Al+, Sb+, Ba+, Cs+, Cd+, Ni +, Hg+, Ti+, W+, Li+, Sr+,
Se-, Zn+,	Zn-, Ni+,	Ca+, Mg+, Mn+, Mo+, Cd+, Ni+,
Ni+, Sn+	Se-, Cr+, Mn+, Ni+, W+	Se-, Cu+, Zn+, Cd+, Ni+,
Co-, Mn-, Zn-, Al+,	Ca+, Cd+, Ni+,	Ca+, Cd+, Ni+
Co-, Mo-, Sr-, Sb+	Se-,	Cu-, Se-,
Mg-, Co-, Sr-, Al+, Sb+,	Ca+, Ba+, Cd+, Ni+,	Ca+, Cu+, Mo+, Cs+, Cd+, Ni+, Ag+,
Co-, Mn-, Zn-,	Se-, Cd+,	Cd+, Ni+,
Co-, Mn-, Zn-, Sn+	Se-, Cs+, Cd+, Ni+,	Ba+, Cs+, Cd+, Ni+,
Co-, Zn-, Cu+	Cs+, Ni+,	Ca+, Ca+, Ni+,
Mg-, Fe-, Co-, Zn- Sr-,	Mo-, Ca+, Mg+, Cr+, Al+, Ba+, Cs+, Cd+, Ni+,	Ca+, Mg+, Cr+, Mn-, Zn+, Ba+, Cs+, Cd+, Ni+,
Co-, Mn-, Zn-, Sb+, Pb+, Sn+	Se-, Cd+, Ni+,	Cr+, Cu+, Mn+, Se-, Cd+, Ni+, Hg+,
Co-, Cu-,	Cd+,	Fe+, Cu+, Mn+, Al+, Cd+, Ni+, Zn+
Co-, Mg+, Sn+	Se-, Ca+, Mo+, Cs+, Cd+, Ni+ W+,	Ca+, Cr+, Ba+, Cs+, Cd+, Ni+, W+,
Se-, Sr+, Al+, Sn+,	Se-, Mg+, Cd+, Ni+,	Se-, Cr+, Mn+, Cd+, Ni+, Hg+
Mo-, Se-, Zn-, Ca+, Mg+	Se-, Cd+, Ni+,	Se-, Ca+, Cr+, Mn+, Ba+, Cd+, Ni+,
Hg+	Fe-, Se-, Ca+, Cd+, Ni+,	Fe-, Se-, Cd+, Ni+,
-	Fe-, Se-, Ni+	Fe-, Se-, Cs+, Cd+, Ni+
Mg-, Co-, Zn-, Al+, Sn+	Se-, Ni+,	Se-, Ca+, Ni+,
Co-, Cu-, Mn-, Mo-, Ba+ Sb+	Se-, Li+	Cu+, Ba+, Cs+, Cd+, Ni+, Li+
Mo-, Zn-,	Co+, Cs+, Cd+, Ni+	Co+, Mn+, Cs+, Cd+, Ni+

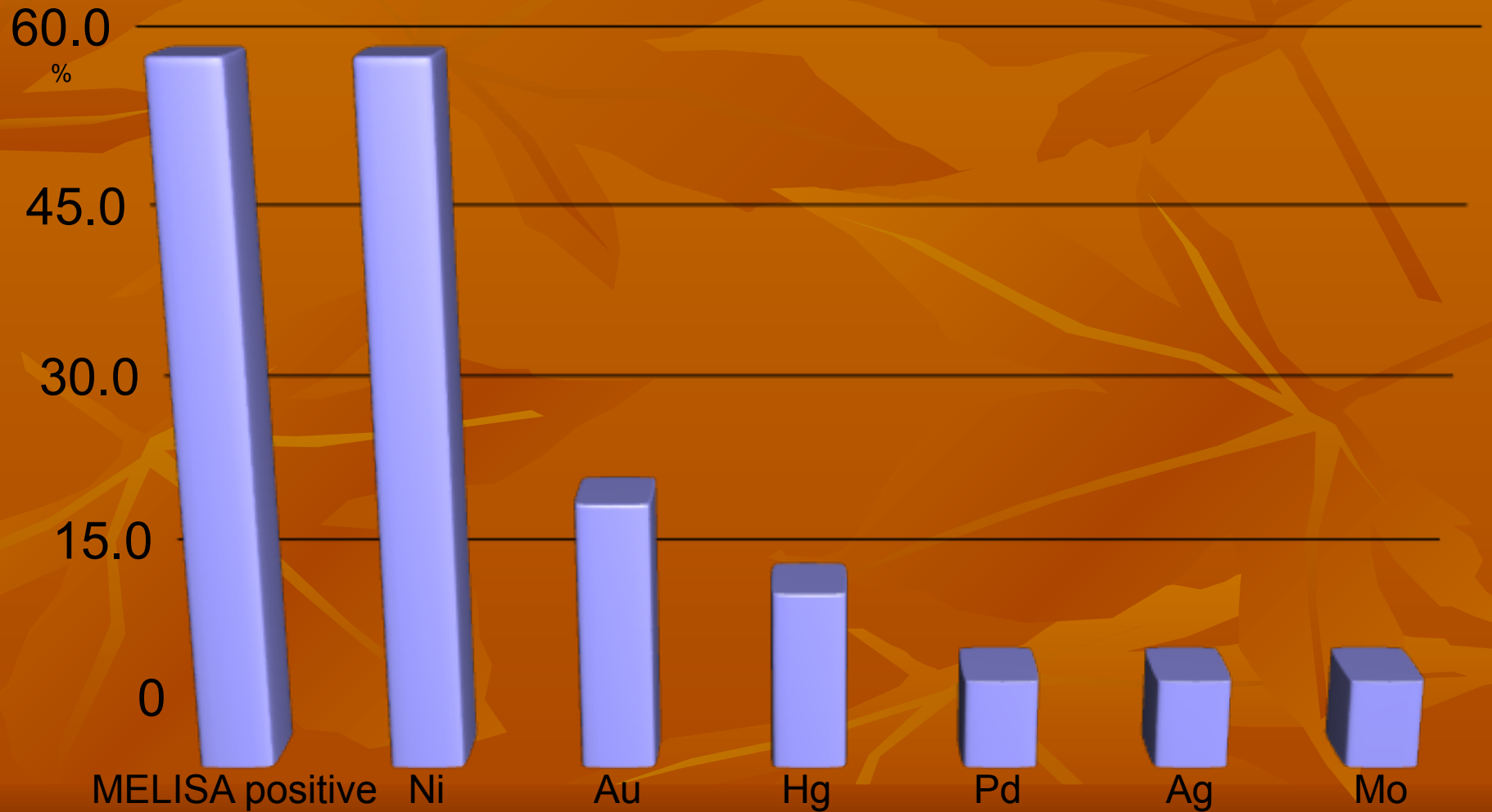
Toxic metal ions in urine and hair after provocation with a single dose of 15 drops energized cilantro tincture



Essential mineral ions in hair and urine after cilantro provocation



Percentage of patients with hypersensitivity to heavy metals



Percentage of patients with genetic polymorphisms of GST-T1 and GST-M1

