SYMPTOMS OF MERCURY TOXICITY

- adrenal gland dysfunction
- alopecia (hair loss)
- anorexia
- ataxia
- birth defects
- blushing
- brain damage
- depression
- dermatitis
- discouragement
- fatigue
- hearing loss
- hyperactivity
- immune system dysfunction
- insomnia
- kidney congestion
- kidney damage
- loss of self-control
- memory loss
- migraine headaches
- mood swings
- nervousness
- numbness and tingling in arms and legs
- pain in limbs
- dizziness
- salivation, excessive
- schizophrenia
- thyroid dysfunction
- tremors, timidity
- vision loss - peripheral
- weakness, muscle

ANTAGONISTS AND CHELATORS

- selenium, zinc, magnesium, vitamin C, calcium and other vital minerals help remove mercury

HAIR ANALYSIS NOTES

- The ideal hair mercury level is below 0.02 mg%, lower than most labs suggest.
- Mercury present in excess in everyone today thanks to fish consumption, water contamination, air pollution, silver amalgam dental fillings and congenital mercury toxicity.
- Months or years are needed to remove most mercury from tissue storage sites. It may not be revealed on hair tests until it begins to come out of the body.
- Mercury toxicity is an indicator of copper imbalance. This may not be apparent on the first few hair mineral analyses.
- Chelating agents can powerfully reduce mercury, but have side effects that are dangerous in some people. These are not needed with nutritional balancing.

NICKEL

SOURCES OF NICKEL

- rooibos tea or red tea
- hydrogenated vegetable oils
- contaminated alcoholic beverages
- margarines and imitation whip cream
- commercial peanut butter
- vegetable shortening
- nickel-plated jewelry
- unrefined grains and cereals
- oysters
- tea
- herring
- nickel plating on metallic objects
- cigarette smoking
- manufacture of steel
- batteries, machine parts, wire, electrical parts
HOW NICKEL AFFECTS THE BODY

Kidneys - nickel has a tendency to accumulate in the kidneys.

Hormone, lipid and membrane metabolism - it is believed that nickel has some physiological role related to these functions.

Cancer – nickel associated with development of lung cancer, specifically, in those exposed to nickel vapors.

SYMPTOMS OF NICKEL TOXICITY

kidney dysfunction
heart attack
cancer, oral, intestinal and lung
skin problems
nausea, vomiting
hemorrhages
malaise
low blood pressure
muscle tremors, tetany and paralysis

ANTAGONISTS AND CHELATORS

vitamin C, other vital nutrients

HAIR ANALYSIS NOTES

• The ideal hair nickel level is probably below 0.05 mg%, lower than most labs suggest.
• Nickel toxicity is very common, but is usually not reflected on early hair tests.

Sauna therapy is helpful or even mandatory to reduce toxic metal levels to the lowest possible levels.
APPENDIX III. MOVEMENT PATTERNS ON A HAIR MINERAL ANALYSIS

Movement patterns are an advanced way to view a hair mineral analysis. Life is more than raising a family, or having a nice home. At a deeper level, life is about movement toward fulfilling certain goals and obligations that one has set out for this lifetime. This is an old metaphysical teaching. Hair analysis can help us to move people along their way by showing us how or where they are blocked or stuck. Here are some examples of this idea:

**Controlled and uncontrolled.** Controlled movement is more predictable. It is found more in slow oxidizers. Uncontrolled movement is more common in fast oxidizers whose glands are too active. They tend to be more impulsive, intense and volatile in their movement patterns.

**Effective and ineffective movement patterns.** Effective movement usually requires more energy. Ineffective movement occurs with lower levels of sodium and potassium, a lower sodium/potassium ratio, perhaps with a high level of calcium or perhaps high toxic metals.

**Moving forward with the brakes on.** This is associated with a calcium shell pattern.

**Fast forward movement.** This is indicated by a faster oxidation rate, in general. In contrast, slow oxidizers are moving slower.

**Inflammation.** This is like doing a wheelie with a car. One might call it spinning one’s wheels in place with little forward motion. It may accompany a three or four highs pattern.

**Stalled movement.** Associated with a transition from fast to slow oxidation due to a need to adjust. Patterns include fast oxidation with a low sodium/potassium ratio, sympathetic dominance, four highs and, to a degree, four lows pattern.

**Floating.** This is an unusual quality in which a person is stuck, not because of exhaustion, but rather due to an inability to find one’s way forward. It is seen with a four highs pattern, in some cases, or perhaps with stalled transition patterns, especially sympathetic dominance, in which a person needs more grounding.

**Stopped movement.** This is indicated by a very high calcium level or a calcium shell pattern.

**Reversed movement.** This is a movement away from health and toward illness. It is indicated by a low sodium/potassium ratio. The tendency is worse with a double low ratio pattern.

**Trapped.** Here a person is not sure in what direction to go. It occurs with a bowl pattern, in particular, but can occur with others, such as any of the stalled transition patterns.

**Open to possibilities.** This is associated with a hill. It indicates that a person has perhaps overcome a blockage of some sort, so that one is free to move on and open up to new horizons.

**Very temporary unstable movement.** This is associated with mixed oxidation.

**Stressed and unstable.** This is associated with a three highs or four highs patterns, which may be slow, mixed or fast oxidizer.

**Determined or digging in one’s heels.** This is associated with double ratio patterns, and even more so a step down or a step up pattern. These may be called extreme effort patterns.

**Collapsed, and perhaps random or shattered.** This is seen with four lows and perhaps with three lows, at times. These can also be end-of-life patterns that may indicate a person is somewhat directionless and drifting toward the end of one’s lifetime.

**Conflicted.** Examples are passive-aggressive pattern and perhaps others such as a bowl pattern.

**Vampirism.** This interesting situation is one in which movement is mixed with the energy of another. One is moving forward, many times, but in a sideways direction because one is not using one’s own power, so to speak, but taking some of it from another person.
APPENDIX IV.

DETERMINATION OF OXIDATION TYPE BY MEANS OF TISSUE ELECTROLYTE RATIOS
by Lawrence Wilson, MD

Abstract. A method of determining oxidation types by means of hair tissue mineral ratios was evaluated by reviewing 55 patient files. Correlations were assessed between tissue calcium/potassium, sodium/magnesium, and sodium/potassium ratios, and nine signs and symptoms of oxidation type. Hair mineral ratios were found to be good predictors of signs and symptoms of oxidation type.

INTRODUCTION
In 1972, Dr. George Watson, PhD proposed that different individuals metabolize their food at different rates, and that deviations in the rate of oxidation can produce physical and mental illness.

He typed people, using various tests, into 'fast', 'slow', and 'sub' oxidizers (1,2). Watson further claimed that fast and slow oxidizers require different kinds of foods and supplementary nutrients, in order to balance their chemistry. By assessing the chemistry, and then giving the appropriate foods and nutrients for each 'type', positive changes were observed in behavior and general health (1,2).

Watson used determinations of serum dissolved CO2 and serum pH, odor tests, or a food preference questionnaire to determine fast and slow metabolic types. Research has been underway for the past decade to find simple, reliable methods to confirm Watson's work, and to improve upon his tests to precisely assess oxidation rate. This study is an evaluation of a method developed by Dr. Paul C. Eck of Phoenix, Arizona, to determine oxidation types utilizing mineral ratios in a sample of hair analyzed by atomic absorption spectroscopy.

METHOD
A) Criteria for inclusion in the study. To be included in the study, each case had to meet 3 sets of criteria: 1) proper hair sampling, 2) proper laboratory technique, and 3) adequate information about the signs and symptoms of oxidation types. The criteria were the following:

1. HAIR SAMPLING: a) normal shampooing was allowed on the day of sampling. b) patients had to wash their hair four times after receiving a chemical permanent, before submitting a sample for analysis. c) hair creams, setting lotions, sprays, conditioners, etc. were allowed to be on the hair. d) hair was clipped from at least three sites from the back of the head and nape of the neck. The sample was cut as close as possible to the scalp, and any hair over 1 and one-half inches long was cut off the sample and discarded. e) clippings were combined until a half-gram sample was obtained.

2. LABORATORY TECHNIQUE: a) all tests were performed at a laboratory that does NOT wash the hair prior to analysis. b) preparation of hair for analysis was by digestion of a 300 mg sample in 2.0 ml of a 3:1 solution of nitric/perchloric acid, heated to 300 °C overnight, and rehydrated with 6.0 ml of 0.9% HCl solution. 0.8 ml of this solution is then diluted to 4.0 ml with a 0.2% cesium chloride solution. c) analysis was performed on an atomic absorption
instrument. d) calibration of the instrument was by Fisher A. A. Standards. e) quality control consisted of testing each batch of samples against:
- a check sample from the Fisher A.A. Standards
- an in-house control hair sample
- a National Bureau of Standards Control
- a blank solution of the acids used in digestion

3) ADEQUATE PATIENT INFORMATION: At least four signs or symptoms of fast or slow oxidation had to be listed in the patient file, obtained at the time the sample was taken.

B) Method of determination of oxidation type from tissue mineral analysis. Two ratios are involved in Dr. Eck's determination of oxidation type (3): calcium/potassium and sodium/magnesium.

**Fast oxidation** is defined by Dr. Eck as a calcium/potassium ratio less than 4:1 and a sodium/magnesium ratio greater than 4.17:1. For this study, two varieties of fast oxidizers were determined and analyzed - fast with a normal or elevated sodium/potassium ratio, and fast with a low sodium/potassium ratio.

Dr. Eck found that the fast oxidizer with a low sodium/potassium ratio (Na/K < 2.5:1) behaves more like a slow oxidizer than a fast oxidizer, at times. It was decided to test this concept as part of the study.

**Slow oxidation** is defined as a calcium/potassium ratio greater than or equal to 4:1 and a sodium/magnesium ratio less than or equal to 4.17:1.

**Mixed oxidation** is a transition or unstable state which is defined as either a calcium/potassium ratio greater than 4:1 and a sodium/magnesium ratio greater than or equal to 4.17:1, OR a calcium/potassium ratio less than or equal to 4:1 and a sodium/magnesium ratio less than 4.17:1. These definitions are summarized in table 1.

**TABLE 1. MINERAL RATIOS FOR FAST, SLOW AND MIXED OXIDATION**

**FAST OXIDATION WITH NORMAL OR ELEVATED NA/K RATIO:**
calcium/potassium ratio LESS THAN 4:1,
sodium/magnesium ratio GREATER THAN 4.17:1,
sodium/potassium ratio GREATER THAN OR EQUAL TO 2.5:1.

**FAST OXIDATION WITH LOW NA/K RATIO:**
Calcium/potassium ratio LESS THAN 4:1,
sodium/magnesium ratio GREATER THAN 4.17:1,
sodium/potassium ratio LESS THAN 2.5:1.

**SLOW OXIDATION:**
Calcium/potassium ratio GREATER THAN OR EQUAL TO 4:1, and
sodium/magnesium ratio LESS THAN OR EQUAL TO 4.17:1.

**MIXED OXIDATION:**
Calcium/potassium ratio GREATER THAN OR EQUAL TO 4:1, and sodium/magnesium ratio GREATER THAN 4.17:1.

OR
Calcium/potassium ratio LESS THAN 4:1, and sodium/magnesium ratio LESS THAN OR EQUAL TO 4.17:1.

C) Sign and Symptom Criteria for Determining Oxidation Type.
George Watson found that certain food preferences, signs and symptoms are associated with each oxidation type. Since the blood and odor tests Watson used were not performed on the patients in this study, it was decided to use food preferences, signs and symptoms as a basis of comparison with the results of the tissue mineral analyses.

The 52-question oxidation test which Watson published (1) had not been given to these patients, but patients had been questioned about food habits, cravings, food preferences, and a variety of physical and emotional symptoms. Utilizing Watson's and Eck's research about oxidation types, nine indicators of oxidation type were chosen for this study:

- frequency of bowel movements
- oily or dry skin
- warmth of extremities
- food cravings
- blood pressure
- sweating
- typical moods
- energy level
- animal protein preference

Following is the rationale for each of the above indicators:

1. Frequency of Bowel Movements. Increased metabolic activity is associated with increased peristaltic activity and hence more frequent bowel movements in the fast oxidizer. More than one bowel movement per day was considered an indicator of fast oxidation. One or fewer movements per day indicated slow oxidation.

2. Dry or Oily Skin and Hair. Increased metabolic activity is associated with increased activity of the sebaceous glands of the skin and scalp, which in turn is associated with oily skin and hair in the fast oxidizer. Patients were asked to subjectively rate themselves as having a tendency to oily or dry hair and skin.

3. Blood circulation. Increased rate of metabolism in the fast oxidizer is associated with enhanced blood circulation, and correlates with a tendency to warmer hands and feet, even in cold weather. Patients were asked if they experienced cold extremities.

4. Food cravings. Food cravings can express the body's desire to balance chemistry. Fast oxidizers tend to crave fats, butter and red meat, foods which slow the metabolic rate. The slow oxidizer often craves sweets to combat hypoglycemia, and salt to replace salt lost through underactive adrenal gland activity (low aldosterone).

5. Blood Pressure. Fast oxidation is associated with increased vascular (sympathetic) tone, and sodium retention due to elevated aldosterone levels. These frequently result in a blood pressure over 120/80. Slow oxidizers tend to have blood pressures of 120/80 or lower. This is due to weaker vascular tone, and/or low sodium levels which causes a reduced blood volume and blood pressure.

6. Sweating. Enhanced metabolic activity increases generation of heat in body tissues. This is associated with increased sweating in the fast oxidizer. Slow oxidizers generally sweat
7. Mood. In fast oxidation, all metabolic processes speed up, including mental functioning. This can result in a tendency to anxiety, nervousness, or jitteriness. Slower mental activity in the slow oxidizer, on the other hand, causes a tendency for sluggishness, lethargy, apathy, and depression.

8. Energy level. A fast oxidation rate, within certain limits, is associated with higher energy levels, than a slow oxidation rate. Fatigue and lethargy can be experienced by both types, but is more common in the slow oxidizer. Patients were asked to subjectively rate their energy level as high or low.

9. Animal Protein Preference. Fast oxidizers require more fat, and tend to prefer red meats to other meats, as they contain a higher percentage of fat. Slow oxidizers tend to prefer chicken, fish, or vegetarian proteins because these low-fat sources of protein speed up and normalize the slow oxidizers' metabolic rate.

PROCEDURE

Ninety-seven patient charts were reviewed. A 'signs and symptoms' worksheet was filled out for each patient. The totals for the slow and fast symptoms categories were added up and expressed as a ratio of fast characteristics to slow characteristics. A ratio greater than 1/1 indicates fast metabolism. Less than 1/1 indicates slow metabolism. Forty-two charts were discarded from the study because fewer than 4 signs or symptoms of oxidation type were listed for the patient.

Ratios of calcium/potassium, sodium/magnesium, and sodium/potassium were calculated for each hair analysis to determine fast, fast with low sodium/potassium ratio, slow, and mixed oxidation as defined in Table 1. The results of the hair analyses and the ratios of fast and slow symptoms for the 55 cases are listed in Table 2.

Correlation was then made to determine how much agreement existed between tissue mineral ratio indicators and sign and symptom indicators of fast and slow oxidation. Results are summarized in Table 3.

TABLE 2. DATA FROM 55 PATIENTS
The following abbreviations are used:
F = fast oxidizer
FI = fast oxidizer with a low sodium/potassium ratio
M = mixed oxidizer
S = slow oxidizer

SIGNS AND SYMPTOMS DATA EXPRESSED AS A RATIO OF FAST/SLOW SYMPTOMS

<table>
<thead>
<tr>
<th>F 2/2</th>
<th>S 0/4</th>
<th>S 1/3</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 2/3</td>
<td>S 0/4</td>
<td>S 1/3</td>
</tr>
<tr>
<td>M 2/4</td>
<td>FI 2/3</td>
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<td>S 0/4</td>
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<td>S 2/2</td>
<td>S 1/4</td>
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<tr>
<td>FI 1/5</td>
<td>M 2/4</td>
<td>FI 1/3</td>
</tr>
<tr>
<td>S 1/3</td>
<td>S 2/4</td>
<td>S 1/5</td>
</tr>
</tbody>
</table>
**Analysis of the data by percentages:**

1) **OF THOSE WITH FAST OXIDIZER TISSUE ANALYSES:**
   * 1 out of 3, or 33.3% demonstrated FAST OXIDIZER symptoms.
   * 2 out of 3, or 66.6% demonstrated AN EVEN MIXTURE OF SLOW AND FAST symptoms.
   * NONE demonstrated SLOW OXIDIZER symptoms.

2) **OF THOSE WITH FAST OXIDIZER ANALYSES WITH LOW NA/K RATIOS:**
   * 2 out of 7, or 28.6% demonstrated FAST OXIDIZER symptoms.
   * NONE demonstrated AN EVEN MIXTURE OF SYMPTOMS.
   * 5 out of 7, or 71.4% demonstrated SLOW OXIDIZER SYMPTOMS.

3) **OF THOSE WITH SLOW OXIDIZER TISSUE ANALYSES:**
   * 1 out of 38, or 2.6% demonstrated FAST OXIDIZER symptoms.
   * 2 out of 38, or 5.3% demonstrated AN EVEN MIXTURE OF FAST AND SLOW symptoms.
   * 35 out of 38, or 92.1% demonstrated SLOW OXIDIZER symptoms.

4) **OF THOSE WITH MIXED OXIDIZER TISSUE ANALYSES:**
   * 2 out of 7, or 28.6% demonstrated FAST OXIDIZER symptoms.
   * 1 out of 7, or 14.3% demonstrated AN EVEN MIXTURE OF FAST AND SLOW OXIDIZER SYMPTOMS.
   * 4 out of 7, or 57.1% demonstrated SLOW OXIDIZER symptoms.
TABLE 3. SUMMARY OF PERCENTAGE CORRELATIONS.

<table>
<thead>
<tr>
<th>HAIR ANALYSIS</th>
<th>CORRELATION WITH SIGNS AND SYMPTOMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>fast</td>
</tr>
<tr>
<td>fast oxidizer</td>
<td>33.3%</td>
</tr>
<tr>
<td>fast with low Na/K</td>
<td>28.6%</td>
</tr>
<tr>
<td>slow oxidizer</td>
<td>2.6%</td>
</tr>
<tr>
<td>mixed oxidizer</td>
<td>28.6%</td>
</tr>
</tbody>
</table>

DISCUSSION

Slow oxidizer tissue mineral ratios were an excellent predictor of slow oxidizer signs and symptoms. Fast oxidizer mineral ratios with low sodium-to-potassium ratios were also a good predictor of slow oxidizer signs and symptoms. Fast oxidizer mineral ratios correlated best with fast or a mixture of fast and slow signs and symptoms. Possibly, this mixed correlation is due to the presence in the study of individuals called 'temporary fast oxidizers' or 'slow under stress'.

These people have fast oxidizer mineral ratios but don't manifest signs and symptoms typical of fast metabolism. The physiological basis for temporary fast oxidation has been elaborated (4). Patients in this category, on retesting their tissue mineral levels after several months of corrective therapy, change to mixed or slow oxidation. Mixed oxidizer mineral ratios correlated best with slow oxidizer signs and symptoms. Most mixed oxidizer hair analyses resolve within 3 months of corrective therapy to slow or fast oxidation.

The percentages of correlation between mixed oxidizer tests, and slow and fast oxidizer symptoms (57% and 28%), approximately matches the ratio of slow to fast oxidizers in the general population (3-4:1). The correlation of the unstable mixed oxidizer tests with slow and fast oxidizer symptoms probably reflects the direction in which the mixed oxidizer tissue tests will resolve.

CONCLUSION

Results of this study support the concept that oxidation type may be determined by calculation of calcium/potassium, sodium/magnesium, and sodium/potassium ratios in an unwashed hair sample analyzed by atomic absorption spectroscopy. Future studies will evaluate the efficacy of nutritional therapy using hair mineral ratios as a basis for diet and supplement regimens.

References
APPENDIX V.

EFFECT OF WASHING ON THE TRACE ELEMENT
CONTENT OF HUMAN HAIR
by Dr. Raymond F. LeRoy, MSc.
(first published in the Journal of Orthomolecular Medicine, Vol., 1, #2, 1986)

ABSTRACT. Three individual studies were undertaken to determine the effects of washing a human head hair sample in water, before analyzing for 15 minerals by atomic absorption. Calcium, magnesium, sodium, and potassium levels were most affected by washing. Longer washing time produced more mineral loss. Sectioning the hair before washing produced slightly lower average mineral loss. Percentage of washout for each mineral was erratic in both cut and uncut samples. Samples from females lost more mineral than samples from males.

METHODS AND MATERIALS

Study A. A single sample of about 8.0 grams of human hair was divided into three equal portions. Portion 1 was left unwashed. Portion 2 was washed in distilled water for 10 minutes. Portion 3 was washed in distilled water for 30 minutes. Portions 2 and 3 were shaken, for the times indicated, on a variable speed mechanical shaker at 30 strokes per minute.

After washing, the two washed samples were decanted and rinsed twice in 500 ml of distilled water in a Gooch Type, glazed porcelain crucible with perforated bottoms, rinsed twice again in flowing deionized water for one minute and placed in a drying oven for 3 hours at 110 degrees C. The washed samples were removed from the oven, lightly covered and allowed to equilibrate overnight. The following day all three samples were cut into 1.0mm lengths or less, using surgical dissection scissors.

Study B. Ten randomly-selected samples which had previously been analyzed in the unwashed condition were chosen for study B. Each sample was divided into two equal portions and cut into 1 mm or less lengths, BEFORE WASHING. The samples were then washed for 10 minutes in flowing deionized water, drained and dried for three hours at 110 degrees C. The samples were removed from the oven and lightly covered and allowed to equilibrate overnight.

Study C. Ten randomly-selected, uncut samples which had previously been analyzed in the unwashed condition were used. Each sample was washed and dried exactly as in study B, but the samples were NOT CUT. Following the washing and drying procedures, the samples were cut into 1.0 mm lengths, or less, and then analyzed.

ANALYSIS PROCEDURE

A. Weighing Out:

Study A. Two 300 mg portions were weighed out of the unwashed sample. Five 300 mg portions were weighed from the 10-minute wash sample. Five 300 mg portions were weighed from the 30-minute wash sample.

Study B and C. One 300 mg portion was weighed out from each sample in Study B and Study C.
B. Digestion:
All of the digestion tubes are acid washed in 10% HCl before use. To each tube in the study was added 2.0 ml of a 3:1 solution of nitric acid/perchloric acid (Baker Instra-analyzed) and tubes were placed under a hood for 30 minutes. The tubes were successively heated at 95 degrees C. for thirty minutes and 210 degrees C. overnight.

C. Trace Element Sample:
Following digestion, the tubes were re-hydrated with 6.0 ml of 0.9% HCl solution and vortexed. This is the trace element sample (Cu, Fe, Mn, Ni, Pb, P, Cd, Al).

D. Macro-element Sample:
0.8 ml of the trace element sample was diluted to 4.0 ml with a 0.2% cesium chloride solution. Cesium chloride is added to reduce the ionization effect of a nitrous oxide flame.

E. Phosphorus Determination:
0.4 ml of the trace element solution was added to 1.0 ml of a vanadomolybdophosphoric acid reagent and read in a Gilford 300N Spectrophotometer, equipped with a flow-through curette, at 400 nm.

F. Mercury Determination:
10.0 mg of hair was dissolved in 0.3 ml of nitric acid in a 16 x 125 tube (Baker Instra-analyzed) and diluted to 10.0 ml with 0.9% HCl solution. The cold vapor method using sodium borohydride (Aldrich) at 253.6 nm. was employed.

INSTRUMENTATION AND EQUIPMENT
All determinations except phosphorus were made on a Perkin-Elmer 5000 Atomic Absorption unit equipped with an AS 50 Auto Sampler, a Data System 10 computer, a PR-100 printer, and a MHS 10 borohydride generation system. Phosphorus determination was performed on a Gilford 300N Spectrophotometer (see above).

CALIBRATION AND QUALITY CONTROL
Calibration of the instrument was achieved using Fisher Atomic Absorption Standards. Quality control encompasses four separate preparations:

- A check sample is prepared from the Fisher A.A. Standards at a concentration about equal to the average patient results.
- An in-house hair control is prepared in the laboratory and is repeatedly analyzed until enough data is accumulated to extract a mean and one standard deviation.
- A National Bureau of Standards bovine liver preparation is used as a control.
- A blank solution of the acids used in digestion.

All of the above preparations are analyzed for every mineral, every time a batch is run. This data is collected and available. All mechanical pipetting equipment is checked monthly for accuracy, as is the electronic balance used in weighing the samples.
DATA

Study A. In table 1, data from the samples - 2 unwashed, 5 washed for 10 minutes, and 5 washed for 30 minutes - are averaged for each category. Individual variation was less than 5% for all elements. Therefore, I believe this to be a valid method of reporting.

<table>
<thead>
<tr>
<th>element</th>
<th>unwashed</th>
<th>10 min. wash</th>
<th>30 min. wash</th>
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<tbody>
<tr>
<td>Cu</td>
<td>1.1</td>
<td>1.1</td>
<td>1.1</td>
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<tr>
<td>Fe</td>
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</tr>
<tr>
<td>Pb</td>
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</tr>
<tr>
<td>Cr</td>
<td>.12</td>
<td>.14</td>
<td>.12</td>
</tr>
</tbody>
</table>

All results are in mg%.

Study B. Results of Study B are reported in Table 2. Only Calcium, sodium, and potassium are reported in study B and study C, these being the only elements which appear to be affected by the one-minute washing. The percent variation of the other elements (Cu, Fe, Mn, Pb, Ni, Cd, Mg, Cr, Al, P, Zn, Hg) was 3 % or less and is considered instrumentational. Copies of the full reports are available.

Three samples from study B have been deleted. They were found to be two horses and a dog. As they did not fit our criteria they were dropped.

| TABLE 2. RESULTS OF STUDY B. SAMPLES CUT TO 1 MM BEFORE WASHING |
|---------------|---------------|---------------|---------------|---------------|
|   | UNWASHED | WASHED | % CHANGE | SEX/AGE |
| CALCULIUM: |
| SAMPLE # | 1 | 23 | 15 | 35 | F/43 |
| 2 | 118 | 94 | 20 | M/34 |
| 3 | 82 | 70 | 15 | F/25 |
| 4 | 82 | 70 | 15 | F/34 |
| 5 | 91 | 80 | 12 | M/39 |
| 6 | 30 | 27 | 10 | M/53 |
| 7 | 11 | 10 | unchanged | M/51 |
| SODIUM: |
| SAMPLE # | 1 | 10 | 5 | 50 | F/43 |
| 2 | 7 | 4 | 43 | M/34 |
POTASSIUM:

<table>
<thead>
<tr>
<th>SAMPLE #</th>
<th>UNWASHED</th>
<th>WASHED</th>
<th>% CHANGE</th>
<th>SEX/AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
<td>75</td>
<td>F/43</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>1</td>
<td>75</td>
<td>M/39</td>
</tr>
<tr>
<td>3</td>
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<td>22</td>
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<td>4</td>
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<td>M/51</td>
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</tr>
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<td>F/25</td>
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<td>7</td>
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<td>3</td>
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</table>

TABLE 3. RESULTS OF STUDY C. SAMPLES LEFT UNCUT BEFORE WASHING.

CALCIUM:

<table>
<thead>
<tr>
<th>SAMPLE #</th>
<th>UNWASHED</th>
<th>WASHED</th>
<th>% CHANGE</th>
<th>SEX/AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>282</td>
<td>95</td>
<td>66</td>
<td>F/27</td>
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<td>2</td>
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<td>97</td>
<td>64</td>
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<td>F/29</td>
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<tr>
<td>4</td>
<td>242</td>
<td>164</td>
<td>32</td>
<td>F/ -</td>
</tr>
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<td>269</td>
<td>196</td>
<td>27</td>
<td>M/56</td>
</tr>
<tr>
<td>6</td>
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<td>M/67</td>
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<td>M/29</td>
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<td>M/38</td>
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<td>83</td>
<td>6</td>
<td>M/9</td>
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SODIUM:

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<th>WASHED</th>
<th>% CHANGE</th>
<th>SEX/AGE</th>
</tr>
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<tbody>
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<td>F/27</td>
</tr>
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<td>10</td>
<td>3</td>
<td>3</td>
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<td>M/29</td>
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POTASSIUM:

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>UNWASHED</th>
<th>WASHED</th>
<th>% LOSS</th>
<th>SEX/AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
<td>75</td>
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</tr>
<tr>
<td>2</td>
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<td>M/9</td>
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<td>M/67</td>
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<tr>
<td>6</td>
<td>48</td>
<td>40</td>
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<td>M/38</td>
</tr>
<tr>
<td>7</td>
<td>16</td>
<td>14</td>
<td>12</td>
<td>M/41</td>
</tr>
<tr>
<td>8</td>
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<td>2</td>
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<td>unchanged</td>
<td>F/50</td>
</tr>
</tbody>
</table>

RESULTS

In Study A, significant change occurred in potassium, sodium, calcium, and magnesium, and to a lesser extent iron, manganese, and nickel levels. Extended washing time resulted in more mineral loss.

In Studies B and C, there was variable loss of calcium, sodium, and potassium from sample to sample, with no constant pattern. Overall, there was more loss in the samples which were not sectioned before washing (Study C). For each mineral studied in both Study B and C, hair samples from women lost more minerals due to washing than samples from men. This may be due to the fact that women’s hair is more porous. The results are summarized in tables 4 and 5.

TABLE 4. RANGE OF MINERAL LOSS IN STUDY B AND STUDY C.

<table>
<thead>
<tr>
<th>Mineral</th>
<th>STUDY B (cut)</th>
<th>STUDY C (uncut)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALCIUM</td>
<td>0 - 35%</td>
<td>0 - 66%</td>
</tr>
<tr>
<td>SODIUM</td>
<td>29 - 50%</td>
<td>0 - 66%</td>
</tr>
<tr>
<td>POTASSIUM</td>
<td>0 - 75%</td>
<td>0 - 75%</td>
</tr>
</tbody>
</table>

TABLE 5. AVERAGE LOSS FROM MALE AND FEMALE SAMPLES

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Loss in females</th>
<th>Loss in males</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDY B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALCIUM</td>
<td>21.6%</td>
<td>10.5%</td>
</tr>
<tr>
<td>SODIUM</td>
<td>35.3%</td>
<td>31.75%</td>
</tr>
<tr>
<td>POTASSIUM</td>
<td>25%</td>
<td>20.75%</td>
</tr>
<tr>
<td>STUDY C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALCIUM</td>
<td>49.5%</td>
<td>15.83%</td>
</tr>
<tr>
<td>SODIUM</td>
<td>22.25%</td>
<td>18.83%</td>
</tr>
<tr>
<td>POTASSIUM</td>
<td>36.5%</td>
<td>19.83%</td>
</tr>
</tbody>
</table>

DISCUSSION

Contamination Versus Endogenous Minerals. Contamination of a laboratory sample is a constant worry for all laboratory workers, particularly when the sample is exposed to the environment as is human head hair. The most often-quoted reference for washing is that
reported by G. S. Kennington in Science Magazine (3) on his study of the effects of soaking antelope hair in a solution of radioactive 22Na (1 uc/ml) for ten days.

While Dr. Kennington shows with this study that hair can be contaminated with 22Na and cleaned with repeated washings of distilled water, and that 24Na is removed under the same conditions, he does not characterize nor differentiate a sodium contamination from the endogenous sodium. The industry has assumed the contamination, which this study does not support.

His comment at the end of the paper, referring to ionic radius and charge, are undoubtedly correct as the residual elements following an eighty-minute wash in distilled water would be the insoluble ones. However, as the body requires soluble inorganic forms, these forms should invariably be present in the tissues formed by that body. Hair is no exception, and Study A would appear to support this observation.

**Percentage of Loss and Chemical Solubility.** Based on the cation solubilities of their compounds, five major solubility groups can be defined, from the least soluble to the most soluble:
1) Lead - (least soluble)
2) Copper, cadmium, mercury
3) Aluminum, chromium, iron, zinc, nickel, and manganese
4) Calcium and magnesium
5) Sodium and potassium - (most soluble)

By comparing the 30-minute wash results of Study A with the five solubility groups, a definite correlation between washout and solubility group can be seen. Likewise, Study B and Study C show the same pattern for calcium, sodium, and potassium in varying degrees. In short, degree of washout correlates well with chemical solubility. We can speculate that washout probably has less to do with physiology or external contamination of the hair, and more to do with chemical solubility of the elements involved.

**Cutting The Hair Before Analysis.** Studies B and C were undertaken to compare the effect of sectioning the hair before and after washing. One minute was chosen as the shortest practical time unit for washing, without making the wash procedure too labor intensive. The data presented in table 2 and 3 show erratic results. While these results may be due to incomplete washing, they may also indicate the individual biochemistry of the samples used. Overall, no consistent percentage of loss was apparent for any of the three minerals during washing in either study. Sectioned samples showed overall slightly lower average percentage of mineral loss during washing. In Study B, the calcium results for samples 3 and 4 are the exceptions.

**Variation in Male and Female Hair Mineral Loss.** Study B and C both showed that samples from women lost more minerals during washing than samples from men. This finding supports studies which indicate that female hair is more porous than male hair. The increased porosity could account for a more rapid loss of mineral from hair cut from women. While more studies are necessary, Study B and C indicate that sex may be another important variable that must be taken into account if hair is washed.
CONCLUSIONS

There is no doubt that washing a sample removes quantities of certain minerals, specifically calcium, sodium, and potassium. Studies A, B and C indicate that the pattern of mineral removal most closely correlates with the chemical solubility of the elements tested.

Some have judged that these losses constitute "contamination". I believe, as Robbins (5) has stated, that we are dealing with highly soluble compounds of calcium, sodium, and potassium, which are required by our body chemistry, and that these losses come from an integral part of the hair fiber.

These studies also indicate that the more washing that is done, the more minerals are removed. Also, the percentage of mineral loss is erratic and variable from sample to sample. In addition, samples from women lose more minerals than samples from men, overall.

Based on the studies presented, I believe that washing of the hair before analysis should be discontinued as a common practice, until we can positively state where mineral contamination stops and where endogenous minerals begin.

ACKNOWLEDGMENTS

Funding for these studies was provided by Analytical Research Laboratories, Phoenix, Arizona.

REFERENCES

1. Corridor, J.P., Head Hair Samples as Indicators of Environmental Pollution, J. Environmental Research, 1974;8:12-16.

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APPENDIX VI.

OTHER HEALING TECHNIQUES

Warning and disclaimer: No claims are made for any procedures described here. Nor are these procedures intended as treatments or prescriptions for any disease or condition. The following are presented for educational purposes only.

USES FOR A SINGLE REDDISH INFRARED ‘HEAT LAMP’

A single reddish, 250-watt ‘heat bulb’ is an extremely helpful device to have around the home for anyone who is following a nutritional balancing program. The cost of the bulb is about $12.00 at a hardware store. Caution: Be careful not to burn yourself and be sure to use a socket that can handle 250 watts. Just a few of the many uses for this lamp include:

• Shining it on the head area as close as you can comfortably tolerate it for nasal polyps, sinus congestion or infection, headaches, ear aches, possibly eye problems, possibly toothaches, scalp eruptions, and neck tension. WARNING: Do not look at the lamp at close range. Always close your eyes if you must shine it at your head area. Always limit the time shining the lamp at your head to five minutes or less per session. You may repeat the treatment up to once every hour for a few days for an acute condition.
• Clients have reported relief from severe low back pain, and even pain due to cancer.
• A client cleared up toenail fungus on all of his toes after all other remedies had failed. He simply moved his toes as close as he could to a red heat lamp that was placed near his feet each day while he did his daily sauna. It took six months, but the toenails are now clear.
• Even babies can benefit who cannot use a sauna. One can shine the lamp on the abdomen for about ten minutes, preferably while the baby is lying comfortably in your lap or on a table. It can help colic, constipation, anxiety, irritability and other problems. Do not shine the light near a baby’s eyes or at a baby’s head at all.
• Skin rashes, blemishes, acne and other skin conditions may or may not respond. Teenage or adult acne often responds beautifully, often in a few days to even one or two treatments for 5-15 minutes per day. It may come back, of course, if other causes are not addressed. Other conditions such as rosacea or some skin cancers may become irritated by the light.
• It can also be tried on pain in the elbows, knees, hands, or anywhere else during a program.

BATHS, GENERAL INFORMATION

Some baths cause problems during nutritional balancing programs because 1) they are very yin, and 2) one absorbs plenty of toxic metals and toxic chemicals from most bath water. For this reason, do not use baths more than once or at most twice weekly, ever.

PARTIAL BATHS

During nutritional balancing program, toxins will be released and infections cleared from all parts of the body. This can cause temporary symptoms such as aches, swelling, redness,
tightness or others. A very useful technique to move the toxins and infections out faster is the use of a partial bath just on the affected part of the body, such as a hand, a knee or a shoulder. Two basic types of partial baths are:

1) **Cold water only.** This is best for severe inflammation, with heat, pain, redness and swelling in most cases. One simply places the body part in a bucket of cold water for half an hour or so. If one cannot place it in the water, then one runs a cold shower on a shoulder, for example, or the back of the neck. Try not to get the water anywhere else so you do not become chilled. This partial bath can be repeated several times daily and is very safe for most people.

2) **Alternating hot and cold water.** This is even more powerful and is part of the old ‘water-cure’ system of healing. One alternately dips the body part in the hottest water one can stand comfortably for about 1-2 minutes. Then one dips it into the coldest water one can tolerate for about 3-4 minutes, usually. Repeat the process for 30-60 minutes or even longer. This is all there is to it. One can run the water in the bathtub or use two buckets, one with ice cubes in it if needed, while the other must be heated up periodically with more hot water in order to stay hot. This partial bath may also be repeated several times daily to relieve any type of inflammation, pain, itching, swelling or other healing reaction on a part of the body.

**HYDROGEN PEROXIDE BATHS AND OTHER USES FOR 35% FOOD GRADE PEROXIDE**

Hydrogen peroxide is one of the simplest, most powerful and safest disinfectants available. Its cost is also low and it is quite easy to use, although the 35% food grade peroxide will cause a slight burn if it spills full strength on the skin. Also, keep it away from the eyes or other sensitive areas of the body. Peroxide is used in some cities to purify drinking water and is widely used in industry to purify chemicals and many other items. Uses for it include:

- **Baths** – place about 1/2 of a cup of peroxide in a warm bath and sit in the bath for half an hour. Submerge as much of the body as possible in it. This can kill off some superficial infections. It is also an oxygenating bath and has other unusual properties that are health-promoting for most people.

- **Teeth** – Brushing with a few drops of 35% peroxide or dipping the toothbrush in peroxide and then brushing helps whiten the teeth, reduces bad breath and is an excellent disinfectant as well. The taste is not too good, however.

- **Cuts and bruises** – Peroxide from the drugstore (3% solution) is excellent for all cuts and bruises. It stings for a moment but will disinfect wounds of all kinds with no toxic effects and complete safety.

- **Hot tubs and pools** – To purify a hot tub, instead of chlorine, bromine and other poisons, add about a cup or so of 35% peroxide to the water about once a week. To check the peroxide level, buy dip sticks for peroxide, which are available on the internet. The safe level is about 200-250 ppm of peroxide. You may also need to add a pH balancing product to the spa water. The water may not look as clean and clear using peroxide, but it will be safer for bathing than any chlorine, silver or bromine treatment. Pools will require a lot more peroxide, and instructions are on the internet.

**EPSOM SALT BATH**

This bath is very relaxing for aching or tight muscles, muscle spasms or nervous tension.
Epsom salts contain a combination of magnesium and sulfur. Magnesium is often deficient in modern diets and one can absorb a significant amount in a bath. The procedure is as follows:

- Purchase 4 pounds of Epsom salts at the drugstore.
- As you fill a bathtub, stir in 3 to 4 pounds of Epsom salts. They should dissolve easily.
- The bath water may be warm or hot, but not uncomfortably so, as the intent is to relax.
- Submerge as much of the body as possible in the bath.
- Stay in the water for 20 to 30 minutes. There is no need to shower off after the bath, though it is okay if desired.

**SALT AND SODA BATH**

This is primarily an alkalinizing and mineralizing bath. It is soothing to the skin, as well, in most cases. It can help balance the body’s energy meridians, as well. While usually comfortable, the salt can sting the skin a little in some individuals. This bath will remove certain toxins and even help with infections, in some cases. It may help if one is experiencing a toxic metal elimination on a nutritional balancing program. The procedure is as follows:

- At the supermarket or drug store, purchase about two pounds of baking soda. Also purchase four pounds of sea salt. Any type of sea salt will do.
- As you fill your bathtub, add about 2 pounds of baking soda and 3 or 4 pounds of sea salt. The bath water should be fairly hot for best results.
- Stay in the water for 20 to 30 minutes. A shower may be helpful if you feel itchy or sticky from the salt. However, it is not necessary to take a shower afterwards.

**HOT BATHS**

A hot bath is a simple and often effective aid for fighting colds and other infections. Heating the core of the body with a bath that is as hot as one can comfortably tolerate is a form of fever therapy that enhances the immune response and weakens or even kills some micro-organisms. The procedure can also help release toxins by inducing sweating. If the idea is to sweat, one can combine the hot bath with a cup of very hot tea, especially a warming tea such as ginger or regular tea, but not a sweetened tea.

**THE GENITAL BATH**

This hydrotherapy procedure is often effective for alleviating vaginal, prostate, bladder, uterine and other pelvic organ difficulties. Bladder and vaginal infections in women often respond very well to this procedure. Men can use it as well for urinary and penile difficulties. The genital bath is probably effective because the cold water causes a reaction that greatly enhances the blood flow to the lower abdominal and genital area. The procedure is as follows:

- Sit on the side of a bathtub tub facing into the tub. Alternatively, sit on a stool placed in the bathtub. One can wear a shirt, as the water will be directed only at the genital area.
- Splash cold water on the genital area only, using a wash rag or a flexible shower attachment.
- Continue the procedure for 10 minutes, and repeat it three or more times per day.

The genital bath can be repeated for as long as necessary with no ill effects.
LIVER-GALL BLADDER FLUSH

The liver-gall bladder flush is a way to force the gall bladder to empty and thus remove gallstones without surgery. It may also accelerate healing of the liver and gallbladder by reducing the amount of stones in the gall bladder. It is not, however, a substitute for a complete nutritional balancing program to restore the normal activity of the liver and gall bladder.

A liver flush or two may help at the beginning of a nutritional program or if one is having gall bladder problems. I am not aware of complications or damage from this procedure, although occasionally someone remains nauseated for several days afterwards. The procedure is:

• For 6 days, eat well, take your nutritional supplements and take 30 drops of phosphoric acid in a glass of water three times daily. Briefly brush your teeth afterwards to remove any acid residue. The drops can be purchased inexpensively via the internet at www.tuberose.com or 877-988-2376 or 352-797-8000 or perhaps elsewhere under the name “Phos-drops”. Instead of the drops, some procedures recommend drinking as much apple juice as possible. However, this is very sugary and will upset blood sugar badly in some people, so I would not recommend this method.
• Also take about 200 mg of magnesium (chelate, citrate or other quality product) three times a day, one tablet with each meal. The phosphoric acid and magnesium help soften stones and help dilate the bile ducts.
• At noon on the sixth day, eat a normal lunch, with the phosphoric acid drops and magnesium. Two hours after lunch, do a 1-quart coffee enema using 2 tablespoons of coffee, along with 2 tablespoons or 1/4 cup of Epsom salts in the enema. Retain this enema for 15 minutes.
• At suppertime, have a normal dinner with supplements, and be sure to have fat with the dinner, such as 2 tablespoons of butter on vegetables or some real whipped cream. At bedtime, take one of the following:
  a) 1/3 cup of olive oil followed by some lemon or other juice if the taste is objectionable.
  b) 1/3 cup of olive oil blended with 1/3 cup of orange, grapefruit or diluted lemon juice.
  c) 4 tablespoons of olive oil followed by 1 tablespoon of fruit juice every 15 minutes until one has take 1/3 cup of olive oil. The olive oil will cause the gall bladder to contract strongly, expelling gall stones.
• Immediately upon finishing the oil, lie down on the right side with the right knee drawn up toward the chin for half an hour. This is to assist emptying of the oil out of the stomach.
• If ill during the night, one may take another strong coffee enema with Epsom salts.
• In the morning, if nauseous try to remain in bed until it passes. Upon arising, take another coffee enema with Epsom salts. If nausea continues after the procedure, eat lightly and skip your supplements for a day or two.
• Do not repeat liver flushes more than once or twice a month. They are not that helpful.

Notes and warnings: You may see some small gall stones in the stool. You will often also see softer cholesterol stones and possibly other debris that was stored in the gall bladder, including even worms and other parasites. Those with gall bladder pain may not experience relief. This may lead you to believe the procedure did not work. This is not true. Most likely, the pain is due to other gall bladder problems, such as parasitic infection, inflammation, imbalance in the gall bladder meridian or other causes. The same problem occurs with gall bladder surgery that does not truly address the cause of the liver-gallbladder pain. Following a nutritional balancing program will usually cause the pain to subside eventually.
For nausea. The release of bile causes nausea in a few cases. If nausea occurs during this procedure, it indicates stimulation of the gall bladder. Finish the procedure. If vomiting occurs, just continue and do not add more than the planned amount of olive oil.

OTHER DETOXIFICATION METHODS

Salt water gargle and sinus flush. This is a very effective way to stop some infections of the nasal passages, throat and sinuses that is very safe and simple to do. The procedure is:

- Mix one-half teaspoon of sea salt (Hain is a good brand) in six ounces of distilled water.
- For throat and bronchial conditions, gargle with this mixture four or five times daily.
- For nasal or sinus-related conditions, sniff or snort the mixture into each nostril at least three to six times daily.
- Continue for several days or as needed. The procedure is very safe.

Castor oils packs. These are helpful for liver detoxification, and are soothing. They were recommended by Edgar Cayce and others. You will need a bottle of castor oil. It is sold in drug stores. Some people prefer organic castor oil, but any type should work. Pour some castor oil onto a piece of 12” by 12” flannel or other thicker cloth. The cloth should be saturated, but not dripping. Then follow either of the two procedures below. The first one is a little better:

- At bedtime, place the oil-saturated piece of flannel on your abdomen. Cover it with a plastic bag to keep the oil from soiling your bedclothes. Wrap an ace bandage around your waist and around the pack several times to hold the pack on to your abdomen firmly. Go to bed this way and keep the pack on all night long. OR
- During the day, lay down on your back in bed. Place the oil-saturated cloth on your abdomen, especially over the liver area. Cover it completely with a large plastic bag. Then place a heating pad on top of the plastic bag and turn it on high. Remain laying down with the pack on your abdomen for 3 hours.

Cleanup. When you remove the pack from your abdomen, place the pack in a glass or plastic container and cover it tightly. You can reuse the pack many times. Just add a little castor oil when it starts to dry out. Wipe off any castor oil that is on your abdomen with a damp rag or perhaps a paper towel.

Hot tubs, if heated to over 103 F. cause some detoxification. Serious problems with hot tubs include: 1) one always absorbs chemicals from the water unless it is distilled or reverse osmosis water. 2) Toxic chemicals, even silver, must be added to the water and these are absorbed as well. Never use chlorine or bromine, if possible, as these are quite toxic, 3) hot tubs are breeding grounds for bacteria and viruses, even if the tub is sanitized, unless you use hydrogen peroxide at about 200-250 parts per million, which will work. 4) you can never really clean the pipes that are inside the tub, so germs build up there that cannot be seen or cleaned out.

Because of these problems, here are rules for hot tubs: Strictly avoid all public hot tubs at hotels, health clubs, and elsewhere as they are often breeding grounds for serious infections and loaded with toxic chemicals. Home hot tubs are better, but you will still absorb chemicals in the
water unless you use reverse osmosis or distilled water and unless the tub is purified with hydrogen peroxide, which works well.

Other detoxification methods. These are discussed in Chapter 5. Please totally avoid ionic foot baths, in particular, as they do damage to the etheric or subtle human bodies.

THE COCA PULSE TEST FOR FOOD REACTIONS (Neuro-Lingual Test)

Theory of the Coca pulse test: Arthur F. Coca, MD, a renowned allergist, noted that upon eating a food to which one is sensitive, the pulse generally increases several beats per minute. The exact mechanism is not clear, but the reaction is most likely a sympathetic nervous system response to the allergic food. The test is easy to do at home with no special apparatus needed. It is not 100% foolproof. However, in my experience, no food allergy testing system is foolproof. This test may not be valid if you are taking a drug that controls your heart rate, such as a calcium-channel blocker or a beta-blocker. Also, do not do this test immediately after exercising or if you are very stressed for any reason. Here is the procedure:

• Sit down calmly and take a few deep breaths to help you relax.
• When you feel relaxed, establish your baseline pulse by counting your heart beat for at least a full minute or two. Preferably record your resting pulse rate on a piece of paper.
• Put a sample of one food item or one food supplement in your mouth, on your tongue. You may chew it if desired, but refrain from swallowing it. You need to taste it for approximately one-half minute. Test only one food ingredient at a time. For example, testing just chicken is much better than testing a chicken enchilada.
• Retake your pulse while the food or the supplement remains in your mouth. An increase of 4 or more beats per minute is considered the result of a stressful reaction to the food. For 0 Blood Type people, an increase of 3 beats or more is considered a positive reaction. The greater the stress response of your body, the higher the heart rate will tend to be.
• After taking your pulse, discard the tested food. Do not swallow it.
• If you wish to test another food, rinse out your mouth with purified water and be sure you are relaxed. Also, before repeating the procedure with another food or supplement, be sure your resting pulse has returned to the baseline level. You may have to wait 2-5 minutes for your pulse to return to its resting level.

APPLIED KINESIOLOGY OR MUSCLE TESTING

This is a method of sensing the body’s electrical reaction to a substance placed in its main energy meridian that runs down the center of the body. The strength of a muscle is tested with and without the substance in the energy field to note if the muscle gets weaker in its presence. Muscle testing can be useful, at times, for which reason I have included it here. Please note, however, that it is a fairly superficial, symptomatic approach compared with nutritional balancing science. It is also dependent too much on the skill of the practitioner. Therefore, its use is strictly limited, and for most purposes I do not recommend it for nutritional testing.

Good uses for kinesiology. The method may be helpful for 1) testing drinking water in some cases, and 2) very sensitive people to test supplements, foods or even skin care or other products. Muscle testing supplements used in a nutritional balancing program may not confirm the recommendations based on the hair mineral analysis. Reasons for this include:

• The practitioner or the client’s energy system can be ‘blocked’ or ‘reversed’.
• The practitioner or the client may be tired, thirsty, tense, ungrounded, or even just distracted.
• The practitioner may be receiving signals based on the time of day. Hair analysis, in contrast, offers a long-term view of what a person needs that is usually much more accurate over the long haul, even if it is not correct on a particular day or time.
• The practitioner cannot easily measure the combination effects of the supplements. The reason is that even though one can hold them all at once, their physiological effects are far more complex than this inside the body.
• Nutritional balancing programs are often designed to break a stagnant pattern in the body, such as four lows. This can temporarily add stress, so it may not test well, though it works.
• Kinesiology may produce only black and white, or good or bad readings unless perhaps one is very skilled. This is not always appropriate in healing, when an intervention or supplement may have both positive and negative effects on a person.
• Nutritional balancing programs depend heavily on supplement combinations. Testing all the complex combinations is basically impossible.

The basic muscle testing procedure: Warning: Muscle testing may not be that accurate, especially if you don’t practice often and check yourself and the client frequently for reversals and other problems. It will also not work nearly as well if the operator or the subject are too tired, hungry, thirsty or stressed.

Step 1. Checking for reversals and blocks.
• Sit comfortably. Have one arm hanging loosely downward by your side. Raise either arm straight out, but slightly forward, with the wrist slightly higher than your shoulder and the elbow locked. The hand should hang loosely from your wrist.
• Have an assistant place two fingers lightly on the top of your upraised arm, just above the wrist. When your assistant says “resist”, have him or her apply downward pressure with the two fingers, while you try to resist the downward pressure. You should be able to do this fairly easily.
• Now twist in an outward direction your other arm and wrist, the one that is not raised. Hold this position vigorously, as hard as you can.
• At the same time, have your assistant again apply downward pressure on your upraised arm. The arm should go weak, meaning you should not be able to resist the pressure.
• If this occurs, you are ready to test foods, water or other items.
• If the arm does not test weak, you are blocked or reversed. Do not continue the procedure. You must rest a few minutes, drink some water, perhaps eat something and try again later.

Step 2. Actual testing. This requires some practice to become proficient.
• Assume the position for testing, as described above with one arm raised.
• Hold a food or other product to the middle of your chest. This places it in a main central acupuncture meridian in a way that cuts through the energy field of the body.
• Test the arm strength, exactly as described above. For confirmation, you may test with nothing in the energy field afterwards, or with something that you know if it is healthful or definitely unhealthful for you.
• If you are testing many items, check for reversals or blocks every 15 minutes or more, repeating step one above. You may switch arms for comfort.
The China Study (2006) caused quite a stir, at least among those interested in vegetarian diets. I found this book objectionable on many grounds, and will just touch upon a few of them. The most important, from a scientific viewpoint, are many simple factual errors. These should alert the reader as to the general competence of the author. For example:

- “Simple carbohydrates are found in foods like white bread… crackers and chips made with white flour.” (p. 98). Bread, crackers and chips are not simple carbohydrates. They are complex carbohydrates. Simple carbohydrates are sugars.
- “Most Americans consume voluminous amounts of simple, refined carbohydrates and paltry amounts of complex carbohydrates.” (p. 98). In fact, Americans eat huge quantities of complex carbohydrates such as breads, cakes, pies, potatoes, chips and so forth.
- “There are virtually no nutrients in animal-based foods that are not better provided by plants.” (p. 213). This is horribly incorrect. Zinc is practically impossible to obtain from vegetable products unless one lives on pumpkin and sunflower seeds. Vitamins A and D, sulfur-containing amino acids, certain fatty acids, alpha-lipoic acid and quite a few others are also much easier to obtain from animal quality foods.
- “Animal protein has the tendency to block the production of supercharged vitamin D.” (p. 180) This is not supported scientifically anywhere that I know of.
- About vitamin D - “This “vitamin” is not a nutrient that we need to consume. Our body can make all that we need simply by being in sunlight fifteen to thirty minutes every couple of days.” (p. 179). This statement ignores all the newer research on vitamin D indicating that sunlight is not sufficient, even if one spends a few hours daily in the sunshine.
- “Nutrition that is truly beneficial for one chronic disease will support health across the board.” (p. 237). In fact, a food such as orange juice that is helpful for one malady (vitamin C deficiency) commonly causes other imbalance (it is very high in sugar and very yin).
- “The recommendations coming from the published literature are so simple that I can state them in one sentence: eat a whole-food, plant-based diet, while minimizing the consumption of refined foods, added salt and added fats.” (p. 242). This is completely incorrect, since there are literally millions of pages of scientific literature that come to different conclusions. If he were right, all doctors would recommend a vegetarian diet, but they do not, in part because plenty of evidence supports the idea that a mixed diet is best.
- “Vitamin supplements are not a panacea for good health.” (P. 228). If this means living on pills, of course it is not a panacea. But the author here is discouraging people from using supplements. This is horrible advice.
- “Nutrition can substantially control the adverse effects of noxious chemicals.” (p. 235) This is not correct. It can help a little, but the statement is absolutely wrong. One must avoid all toxic exposures as much as possible, and one must detoxify the body with supplements and other methods such as saunas or one will not remove most toxic chemicals and toxic metals. Food alone, in my extensive experience, will not do it.
- “Good nutrition creates health in all areas of our existence. All parts are interconnected.” (p. 238) I wish it were that easy. Especially on a vegetarian diet, it does not create health in any area that I have noticed with my clients, and many other doctors have found the same thing. One must also live a healthful lifestyle, detoxify the body, and perhaps do other therapies such as chiropractic or others to create health in more areas of life.
Another severe flaw in the book is to compare the needs of Chinese peasants with those of Americans. Chinese and other Orientals seem to need less B-complex and zinc, for which reason they have been vegetarian-oriented people for thousands of years. Caucasians, however, have never been vegetarians, and do not do nearly as well on this diet.

One-sided arguments. Another flaw in this book is that the author himself states that he is a big fan of a vegetarian diet. He spends most of the book proving his case by presenting only one side of the story. This is fine as a vegetarian manifesto. However, the author portrays himself and the book as ‘objective’ and ‘scientific’, when it is anything but that. The author does not even admit that there is another side to the story, and repeatedly derides well-respected physicians who favor animal protein diets.

For example, a wonderful book that presents both sides of the story is Nutrition And Physical Degeneration by Weston Price, DDS. Dr. Price investigated not one race, but all races on planet earth. He found that meat-eating produced far better health, especially inter-generationally, something that Dr. Campbell did not investigate at all. However, this may be said to be the most important criteria for health – how healthy will the babies be? In other words, even if you feel better on a vegetarian regimen, how will your grandchildren fare on this diet? The answer among the vegetarians was, not well at all. He found that vegetarian diets led to more birth defects. This should not be surprising because zinc and selenium, for example, are critical to prevent birth defects, and are lower in many vegetarian diets. All vegetarians should take zinc and selenium supplements, but they often do not work as well as eating some animal protein, which has many other nutrients as well. A more balanced view of vegetarian diets must include the following:

Benefits of vegetarian diets. They tend to be higher in fiber and generally higher in fresh fruits and vegetables. They also tend to be higher in some vitamins, such as vitamin C and E. They tend to be lower in fat, which may be helpful for a few people today, but harmful for many others. They are also lower in iron, which is also helpful for some, particularly older men, but harmful for others. They are also lower in some pesticides and hormones injected into animals. This is a definite benefit, but not important if one eats only organic food, as suggested.

This must be balanced with the problems with vegetarian diets. They are much higher in copper and carbohydrates, in most cases. Most people already have too much copper and most eat too many carbohydrates. Even worse, they tend to be very low in zinc, vitamin D and B-complex vitamins that most people desperately require more of. They are also usually much lower in sulfur-bearing amino acids such as taurine, cysteine and methionine. These are essential for liver detoxification and many other functions in the body. Meat also contains other nutrients that our bodies require such as L-carnitine, alpha-lipoic acid and many others.

Extremely yin and low in etheric energy. Another serious problem with vegetarian diets is that they are very yin in Chinese medical terminology. I realize this is a more esoteric concept. It means they are more expanded and centrifugal in nature. This is okay, except that it further unbalances most people today whose bodies are already too yin. Another serious problem from a mental development standpoint is that most vegetarian food is very low in etheric energy. This is a subtle life energy that has nothing to do with food enzymes or cooking of food. It is a quality of animals, basically, so vegetables contain very little of it. Yet it is helpful for the mental development of human beings. One need only look to the vegetarian nations of the world to realize that the people there are not more developed, but much less so than those in nations such as America who eat more meat. For all these reasons, The China Study was a great disappointment, as a physician looking for unbiased scientific reporting.
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ABOUT THE AUTHOR

Lawrence Wilson was in college studying electrical engineering at the Massachusetts Institute Of Technology when his brother was suddenly diagnosed with late-stage Hodgkin’s disease. He switched college majors and soon obtained a grant from the MIT Department of Nutrition to study the relationship between diet and cancer.

After graduating college, in hopes of helping his brother, he applied to medical schools, but shunned American schools that taught only drug cures. He obtained a medical degree from the Autonomous University of the State of Guerrero, in Chilpancingo, Mexico. While attending medical school, he studied with a number of natural healing practitioners.

Dr. Wilson developed chronic fatigue syndrome and other health problems following medical school. His journey to restore his own health led him to work with many healing methods, both medical and alternative. Like so many, he consulted doctor after doctor looking for answers. Among the most important teachers that he studied with and learned from were Bernard Jensen, ND, DC, Michio Kushi of macrobiotics fame, Roy Masters who teaches meditation, William Donald Kelley, the cancer pioneer, and several others.

In 1981, Dr. Wilson opened a nutrition consulting practice in Phoenix, Arizona. The following year he met Dr. Paul C. Eck, to whom this book is dedicated. This began a lifelong friendship and professional relationship that lasted 14 years until Dr. Eck’s death. Dr. Wilson learned nutritional balancing science from Paul Eck and his staff, and gave numerous seminars with them.

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