

MOSAIC 2 EXCERPTS

NATURAL MEDICINE MOSAIC

VOLUME 2

GENERAL TABLE OF CONTENTS

Preface	iii
General Table of Contents	iv
Table of Contents: The Science of Food Therapy	1
Table of Contents: Holistic Gerontology	59
Table of Contents: The Science of Nutritional Supplementation	179
Glossary	255
Index	266

The Science of Food Therapy

TABLE OF CONTENTS

Introduction	5
Macronutrients-overview	6
Micronutrients-overview	8
The Science and Art of Healing with Vegetables	8
Artichoke	10
Asparagus	11
Beets	11
Bell peppers	12
Bitter melon	12
Broccoli	12
Brussels sprouts	13
Cabbage	13
Carrots	14
Cauliflower	14
Celery	15
Cucumber	15
Dandelion	15
Eggplant	16
Fennel	16
Garlic	16
Kale	17
Kohlrabi	17
Leeks	17
Lettuce	17
Mustard greens	18
Okra	18
Onions	19
Parsley	19
Parsnip	20
Potatoes	20
Radishes	20
Rutabaga	21
Shallots	21
Spinach	21
Squash	22
Pumpkin	22
Sweet potatoes	23
Swiss chard	23
Tomatoes	24
Turnip	24

Yams	24
The Science and Art of Healing with Fruits	25
Apple	25
Apricots	25
Avocado	25
Banana	26
Blackberries	26
Blueberries	26
Cantaloupe	27
Cherries	27
Cranberries	28
Dates	28
Figs	28
Grapefruit	29
Grapes	29
Honeydew melon	29
Kiwi	30
Lemon	30
Lime	30
Mango	31
Nectarines	31
Oranges	31
Papaya	32
Peaches	32
Pears	33
Pineapple	33
Plums	33
Pomegranate	34
Prunes	34
Raisins	34
Raspberries	35
Strawberries	35
Watermelon	35
The Science and Art of Healing with Grains	36
Corn	36
Oats	36
Rice	37
Wheat	37
Minor grains	38
Amaranth	38
Barley	38
Buckwheat	38
Millet	39
Quinoa	39
Rye	40
Spelt	40

The Science and Art of Healing with Legumes	40
Beans	40
Chickpeas	41
Lentils	41
Peas	42
Soybeans	42
The Science and Art of Healing with Nuts, seeds and oils	43
Almonds	43
Brasil nuts	44
Cashews	44
Chestnut	44
Coconut	45
Flax seed	45
Hazelnuts	46
Macademia nuts	46
Peanuts	47
Pecans	47
Pine nuts	47
Pistachio nuts	48
Pumpkin seeds	48
Sesame seeds	48
Sunflower seeds	49
Walnuts	49
The Science and Art of Healing with Fish and shellfish	50
Cod	50
Halibut	50
Salmon	51
Tuna	51
Crab	51
Lobster	51
Shrimps	51
Clams	51
Oysters	51
Scallops	51
The Science and Art of Healing with Dairy	52
Cow milk	52
Goat milk	52
Yogurt and kefir	53
The Science and Art of Healing with Meat and Poultry	53
Beef	53
Chicken	53
Lamb	54
Pork	54
Turkey	54
Eggs	54
Miscellaneous foods	55

Blackstrap molasses	55
Brewer's yeast	55
Honey	55
Mushrooms	56
Olives	56
Food varieties	57
Milk products	57
Bibliography	58

Legend:

I Source of Inulin

O Source of oxalates

P Source of purines

N Nightshades

G Goitrogens

D May interfere with antidiabetic medication

I Inulin fiber is a carbohydrate belonging to a class of compounds known as fructans. Because inulin fiber is resistant to digestion in the upper gastrointestinal tract it reaches the large intestine essentially intact, where it is fermented by local bacteria;

O Oxalic acid: occurs in plants; has calcium binding properties and it may cause the precipitation of calcium oxalate in the kidneys ;

P Purines: include adenine and guanine, constituents of nucleic acids;

NThe **Nightshade** or Solanaceae family; the most important representatives are the potato, eggplant, tomato, garden pepper, tobacco, and many garden ornamentals, including the petunia; nightshades are sources of alkaloids such as nicotine, atropine, and scopolamine; may promote inflammation in given individuals;

G Goitrogens: substances that promote goiter development when consumed in raw state; cooking inactivates goitrogens;

I ARTICHOKES

Nutritional value

Artichoke/1 large	
Calories	76
Macronutrients	
Total fat (g)	0.2
Saturated fat (g)	0.1
Cholesterol (mg)	0
Dietary fiber (g)	8.8
Carbohydrate (g)	17
Protein (g)	5
Micronutrients	
Sodium (mg)	152
Vitamin C (mg)	19
Folate (mcg)	110
Magnesium (mg)	97
Phosphorus (mg)	146

Active component: CYNARIN-choleretic action; anti HIV; all parts contain cynaropicrin (bitter substance with digestive stimulant properties) and inulin;*

Uses:

- Stimulate digestive secretions, especially bile;
- Supports liver's detoxification process;
- May help lower cholesterol levels.

**Choleretic: stimulating bile production by the liver; Fresh artichokes are low in calories, because their main carbohydrate is inulin; A single artichoke is actually an unopened flower bud from a thistle-like plant, *Cynara scolymus*.*

STRAWBERRIES O moderate levels

Nutritional value

Strawberries/1 cup whole	
Calories	43
Macronutrients	
Total Fat (g)	0.5
Dietary fiber (g)	3.3
Protein (g)	1
Carbohydrate (g)	10
Micronutrients	
Sodium (mg)	1
Vitamin C (mg)	82
Manganese (mg)	0.4
Also, vitamin K, manganese, vitamins B5, B1, iodine;	

Active components : flavonoids (anthocyanidins), vitamins C and K;

Uses :

Antioxidants;
Protective against cardio-vascular disease;
Anti-cancer benefits;
Anti-inflammatory properties, due to the flavonoids' action on lowering the activity of cyclooxygenase (enzyme linked to inflammatory conditions, such as asthma, arthritis, atherosclerosis, etc);
Comments: allergenic fruit; the red colour of strawberries is due to a flavonoid named pelargonidin;

G MILLET

Millet/1 cup cooked	
Calories	286
Macronutrients	
Total Fat (g)	2.4
Dietary fiber (g)	3.1
Protein (g)	8
Carbohydrate (g)	57
Micronutrients	
Sodium (mg)	5
Thiamin (mg)	0.3

Active components: protein (superior to the one of wheat, corn and rice), fiber;

Uses :

- Nutritious grain;
- Protection against cardio-vascular disease and cancer (due to fiber content);

Comments:

Hypoallergenic and GLUTEN-FREE; use with

G MILLET

Niacin (mg)	3.2
Magnesium (mg)	106
Zinc (mg)	2.2

caution for cases with CELIAC DISEASE, as millet may contain prolamines.

O (moderate amounts) SUNFLOWER SEEDS

Nutritional value

Sunflower seeds (with hulls), 1 cup (234g)	
Calories:	262
Macronutrients	
Protein(g)	10.5
Carbohydrat(g)	8.6
Total Fat(g)	22.8
Fiber(g)	4.8
Micronutrients	
Magnesium(mg)	163
Selenium(mcg)	27.3
Folate(mcg)	105
Zinc(mg)	2.3
Vitamins E, B1, B5, B6, magnesium, selenium, phosphorus, copper, iron;	

Active components: MUFA and PUFA, arginine, magnesium, folate, zinc;

Uses :

- Cardio-vascular protection;
- Beneficial for prostate gland.

Comments: sunflower oil is light in taste and supplies high amounts of vitamin E;
Some specialists recommended sunflower seeds as an adjuvant measure for allergies approach.

Holistic Gerontology

TABLE OF CONTENTS

Basis of Aging	66
Definitions on Aging	66
The Aging aspect	66
Longevity	67
Classification of Age	67
Classification of Aging	67
The Mechanism of cellular aging	67
Limited cell division	67
Necrosis and apoptosis	68
Theories of Aging	68
Loose cannon theory	68
Weak link theory	69
Error catastrophe theory	69
Rate of living theory	69
Morbidity and mortality in Gerontology	69
Geriatric Assessment	69
General approach	70
Geriatric assessment	71
Interview/questionnaire	71
Observations/clinical pictures of note	74
General appearance	74
Integumentary system	74
Senses	75
Mouth and throat	75
Musculo-skeletal system	75
Nervous system	76
Respiratory system	76
Cardio-vascular system	76
Digestive system	77
Urinary system	77
Reproductive system-female	77
Prevention and rehabilitation in Gerontology	78
Prevention	78
Prevention of disease	78
Prevention of accidents/injuries	78
Preventive measures in alternative medicine	78
General measures	79
Food and eating	79
Basic principles	79

Helpful hints when living alone	79
Diet	80
Detoxification and elimination	81
Detoxification	81
Sources of toxins	81
Exogenous	82
Endogenous	82
Principles and applications	83
Liver health	83
Liver detoxification	83
Elimination	84
Exercise	85
Benefits of exercise	85
Types of exercise	85
Effects of exercise on body systems	86
Therapeutic exercise	86
Rehabilitation	88
Definition	88
Examples	89
Functionality measures and devices	89
General measures	89
Canes	89
Walkers	90
Wheelchairs and scooters	90
Rehabilitation in alternative medicine	90
Drugs and the elderly	91
General information	91
Drugs/foods interactions	91
Effects of some drugs on the elderly	92
Adverse drug reactions	93
Drugs/supplements interactions	94
Drugs/plants interactions	96
Adverse reactions of some nutraceuticals	99
Physiology of Aging	100
Vision	100
Needed nutrients for the elderly eye and vision	101
The Ear and the sense of balance	101
Needed nutrients for the ear and the sense of balance	101
The Smell and taste	102
Needed nutrients for the senses of smell and taste	102
Distribution of body fluids	102
The immune system	102
Needed nutrients for the immune system	103
The Nervous System	103
Needed nutrients for the nervous system	103

Body temperature	103
The sleep pattern	104
The Endocrine system	104
Needed nutrients for the endocrine system	104
The reproductive system	105
Female	105
Needed nutrients for the female reproductive system	105
Male	105
Needed nutrients for the male reproductive system	105
The cardio-vascular system	106
Needed nutrients for the health of the cardio-vascular system	106
Blood	106
Needed nutrients for the blood	106
The respiratory system	107
Needed nutrients for the respiratory system	107
The urinary system	107
Needed nutrients for the urinary system	107
The digestive system	108
Needed nutrients for the digestive system	108
Leaky gut	108
The musculo-skeletal system	108
Needed nutrients for the musculo-skeletal system	109
The integumentary system	109
Needed nutrients for the integumentary system	110
Common symptoms/disorders associated with aging	110
Dizziness and fainting	110
Dizziness	110
Fainting	111
Confusion	111
Delirium	111
Dementia	111
Falls	112
Physical condition problems related to falls	112
Environment hazards	112
Effects of falls	112
Prevention of falls	113
Notes on bruising	113
Body temperature abnormalities	113
Hyperthermia	113
Definitions	114
Health and lifestyle risk factors for Hyperthermia	114
Health factors	114

Lifestyle factors	114
Hypothermia	114
Causes	114
Signs and symptoms	115
Treatment approach	115
Water and electrolyte balance abnormalities	115
Dehydration	115
Electrolyte imbalances	116
Nutritional abnormalities	116
Undernutrition	116
Obesity	118
Micronutrients abnormalities	118
Vitamins deficiencies and contraindications	119
Mineral deficiencies and contraindications	120
Pain	120
Classification	121
Chronic pain-consequences	121
Referred pain	121
Examples of therapeutic measures	121
Pathology of Aging	122
Nervous system disorders	122
Sleep disorders	122
Insomnia	122
Cerebro-vascular disorders	122
Stroke	122
TIA	123
Holistic therapeutic approach	123
Disorders of movement	124
Parkinson disease	124
Notes on speech	124
Psychiatric disorders	125
Alzheimer's disease	125
Depression	126
Notes on substance abuse and dependence	128
Anxiety disorders	128
Agoraphobia	128
Panic disorders	128
Panic attacks	128
Social anxiety disorder	128
Generalized anxiety disorder	129
Obsessive-compulsive disorder	129
Nutrition and holistic approach	129
Endocrine system disorders	130
Diabetes	130
Hyperthyroidism	133

Grave's disease	133
Toxic nodular goiter	133
Hypothyroidism	134
Hypercholesterolemia	136
Integumentary system disorders	137
Dry skin	137
Itching	137
Pressure sores	137
Corns and calluses	138
Venous/Varicose ulcers	138
Shingles	139
Warts	140
Rosacea	140
Psoriasis	141
Eye disorders	142
Cataract	142
Macular degeneration	143
Glaucoma	143
Hearing and ear disorders	144
Hearing loss	144
Hearing aids	144
Tinnitus	145
Voice disorders	145
Vocal cords atrophy	145
Mouth and dental disorders	146
Tooth decay	146
Periodontal disease	146
Dry mouth	147
Mouth sores	148
Musculo-skeletal disorders	149
Bunion	149
Osteoarthritis	149
Osteoporosis	151
Cardio-vascular disorders	153
Atherosclerosis	153
High blood pressure	155
Varicose veins	156
Digestive system disorders	157
Gastro-esophageal reflux disease	157
Dyspepsia	159
Constipation	160
Hemorrhoids	161
Urinary system disorders	162
Urinary tract infections	162
Urinary incontinence	162
Female reproductive system	163

Menopause	163
Male reproductive system	165
Benign prostate hypertrophy	165
Cancer	166
Digestive system tumors	166
Esophageal cancer	166
Gastric/stomach cancer	166
Colon cancer	167
Gynecologic cancer	167
Vaginal cancer	167
Cervical cancer	167
Endometrial cancer	167
Ovarian cancer	167
Breast cancer	167
Lymphoma	167
Hodgkin's disease	167
Non-hodgkin's lymphoma	168
Skin cancer	168
Basal cell carcinoma	168
Squamos cell carcinoma	168
Malignant melanoma	168
Prostate cancer	168
Lung cancer	168
Therapeutical nutritional approach for cancer	169
Psychology of aging	171
Introduction	171
Social psychology of aging	171
Age stages	171
Middle age	171
Old age	172
Human needs applied to elderly	172
Long term care types	174
Caregiving	175
Challenges in caregiving	175
Caring for the terminally ill	175
Physical Care	175
Psychological Care	175
Social Care	175
Spiritual Care	176
Palliative Care	176
Death with dignity	176
Basics of managing terminal illnesses	176
Physical management	176
Living wills	176
Power of attorney	176

Dealing withy dying and death

176

Bibliography

178

DEFINITIONS on AGING

Aging: the gradual structural changes that occur over time and are not caused by pathology (disease); process of gradual maturation;

Geriatrics: branch of medicine dealing with problems of the aging and diseases of the elderly;

Gerontology: the scientific study of all aspects related to aging;

Life expectancy: how long, on average, a human being is expected to live;

Lifespan: the period of time in which the life events of a species occur;

Longevity: the period of time an organism is expected to live under ideal circumstances;

Senescence: the fundamental process of aging, in which the capacity of cell division and functions are lost over time.

Classification of *Age*:

- *Chronologic age:* a person's age in number of years; it has very limited biological value, but it may have statistical, legal or/and financial value; for example, eligibility for certain programs is based on chronologic age;
- *Biological age:* physiological changes that occur with aging; depending on heredity, lifestyle and exogenous factors, biological age may vary from an individual to another; some people may be biologically old at 50, whereas others may be biologically old at 70;
- *Psychological age:* refers to how people feel and act.

Geriatric Assessment:

2a. Interview/Questionnaire

For all the information listed below, one of the most important aspects is *change*. Have things change since last time you met your client/patient? Are they worse? Are they better?

Sample fragment

Interview criteria	Question	Rationale
MAIN COMPLAINT (headache, joint pain, etc)	All details (intensity, frequency, location, aggravating and releasing factors)	The main complaint is what seems to be bothering this subject most. You need to pay additional attention. It could be a manifestation of a newly developed disease or a new symptom of a previous disease;
Subsequent complaints in priority order	Same as the assessment above, for the main	As above, these complaints may be significant to the actual disease or they may be part of a previous disease process. Take into consideration possible

Interview criteria	Question	Rationale
	complaint	short term memory loss and reformulate your questions, when in doubt.
Social aspects assessment	Living arrangements	Do they live alone and would require certain help? Do they have a caregiver on a temporary basis? Do they live with family and are properly taken care of? All these questions require clear answers to help you assess the level of independence/dependence and the physical/psychological issues associated with them.
	Usual day description	This aspect will help you assess if they have physical impairments they are not aware of; if they eat properly; sleep sufficiently; have company and a social life; if they are growing depressed from solitude and/or losses, etc
	Family interactions	Do they get along with their partner, if any? Do they get along with family members, especially if the family members are the ones primarily responsible for the elderly care? Any sign of elderly abuse?
	Social interactions	Are they having a social life? Do they go out with friends, if ambulatory? If non-ambulatory or partial ambulatory, do they receive visits and/or social groups support? Do they belong to a certain club/social group/religious group?
	Decisions in case of incapacitation	This is a very important decision and needs a sensitive approach. They need to decide over the possibility of going into long term care facilities, if the need arises; what happens if they can not decide for themselves; who will have POA; DNR(<i>Do not resuscitate</i>) order status.

CLINICAL PICTURES OF NOTE

General appearance

Pale, drained, recent weight loss may suggest neoplasia;
Sadness, crying, eating disorders may suggest depression;

Integumentary system

Skin itching		Jaundice, uremia, cancer, dehydration;
Bruising		Trauma (from falls, tripping); Possibility of abuse; Clotting disorder.
Nails	Frail, thin	Nutritional deficiencies
	Thick	Onychomycosis (fungal infection).

Sources of toxins:

We can not live in glass jars... We are human beings under severe toxin exposure. There are ways of avoiding exposure, but most of them are difficult to achieve. But, whereas we can not very much control our environment (yet), we definitely control what we eat and what we drink. Also, if we believe that we are exposed to a variety of toxins, we would be very wise to take measures that ensure a certain degree of detoxification.

A certain percentage of the aging population will be on prescription medication for various health problems. It would be wise to ensure proper detoxification for people on medication, as outlined below.

Exogenous (external)	
Airborne toxins	Gas fumes; Vehicles exhaust; Acid rain; Fossil fuel combustion;
Indoor pollution	Carpet and furniture dust and debris; Chemical treating of walls, carpeting, wood structures, building materials; *Radon exposure;
Food toxins	Pesticide-treated fruits and vegetables; High processing of various foods; Additives, preservatives, hormones, antibiotics used in food preparation and stabilization;
Water contamination	Chemical and agricultural waste; Tap water chemical treatments;
Recreational toxicants	Smoking, drug use, coffee;
Drug intake	Pharmaceutical drugs may carry a heavy chemical load along with the therapeutic agent

Exogenous (external)	
Cosmetic products	Any of the ones used

* Radon is an odorless gas produced in the soil by uranium degradation; it can gain access indoors through cracks in the basement.

Therapeutic exercise (performed as part of treatment in the event of an existing disease)

Consult a doctor before prescribing/suggesting therapeutic exercise to an elderly patient/client!

AEROBIC EXERCISE

Indications	Contraindications
<ul style="list-style-type: none"> • Intermittent claudication; • Post MI, three months at least after fully recovered; • CAD and stroke prevention; • Depression, anxiety; • Obesity; 	<ul style="list-style-type: none"> • Strain/sprain, fractures; • Unstable angina (use caution when recommending); • Uncontrolled heart arrhythmia; • CHF; • Trombophlebitis; • Embolism; • Acute infections; • Psychosis;

Sample fragment:

Adverse reactions of some nutraceuticals	
L-Acetyl carnitine	Body odor, skin rashes, and digestive disturbances, such as nausea, vomiting, diarrhea, and abdominal cramps;
Chamomile	Allergic reactions, skin rashes on topical applications;
Chondroitin	Mild abdominal discomfort; possible allergic reactions, when supplement developed from cartilage;
Coenzyme Q10	Mild insomnia, rashes, an increase in levels of liver enzymes, loss of appetite, heartburn, nausea, and diarrhea;
Creatine	Nausea, diarrhea, and dehydration;
DHEA Dehydroepiandrosterone	Breast enlargement in men and hairiness in women; hair loss, decreased HDL levels and increased LDL levels; also, increase in the blood sugar level in people with diabetes; liver problems;

The Ear and the sense of balance

- Exposure to loud noises may decrease the hearing acuity;
- Wax accumulation in the outer ear; blocks the pathway of sound waves to the hearing receptor (in the cochlea);
- Degeneration of cochlea structures; affects the hearing receptor's function, and therefore, the hearing perception;
- Various degrees of deterioration of the structures within the middle ear (the ossicles); may result in decreased sound waves transmission to the inner ear, which ultimately results in decreased hearing acuity;
- Deterioration of the structures within the inner (internal ear); may result in balance problems, as the equilibrium receptors may be affected;
- With age, people seem to lose the ability to hear high pitched sounds and also the ability to hear consonants well (this is why they always ask you: "*Why are you mumbling?*"; they simply can not hear the consonants in your phrases);

Needed nutrients for the ear and the sense of balance

EFA's, as they are important in wax formation*;
Vitamin B complex, important for energy pathways and nerve transmission;
Magnesium, seems to be important in maintaining the sense of balance;

* *Usually, presence of dark ear canal wax means an EFA imbalance/deficiency*

NOTE: hypoglycemia has been related to inner ear imbalances;

HEARING LOSS: *deterioration of hearing*; deafness is extreme hearing loss.

Hearing loss (along with visual disturbances) greatly impedes on the quality of life of an elderly person. In some cases, hearing loss applies only to sound levels below a certain degree of loudness. In other cases, the sound pitch is the problem. Nevertheless, hearing loss can cause psychological and/or physical impairment in the elderly. If they can not hear the spoken words, they are more than likely to avoid conversations and isolate themselves socially, which, in time, may lead to depression. People with hearing impairment may not be able to hear a fire alarm or a car horn, which poses a great risk for accidents.

Causes of hearing loss:*

- Aging;
- Noises: destroys the elements of the hearing receptor, diminishing our capacity to react to sound stimuli; the louder and more prolonged a sound is, the more it can affect the hearing;
- Drugs, such as gentamycin (antibiotic), some chemotherapy drugs, aspirin;
- Ear wax accumulation blocks the external auditory canal and does not allow the sound waves to reach the inner ear, where the hearing receptors are located;
- Other causes: infections, allergies, tumors, foreign objects, strokes.

**Presbycusis*: gradual hearing loss affecting older people

Therapeutic approach:

1. Hearing aids: increase the volume of sound reaching the eardrum

A hearing aid is an electronic, battery-operated device that amplifies and changes sound to allow for improved communication for people with hearing loss; generally prescribed for people with sensorineural (inability to sense sounds once they reached the cochlea) hearing loss.

Types of hearing aids:

- *In-the-Ear (ITE) hearing aids* fit completely in the outer ear and are used for mild to severe hearing loss;
- *Behind-the-Ear (BTE) hearing aids* are worn behind the ear and are connected to a plastic earmold that fits inside the outer ear; sound travels through the earmold into the ear;
- *Canal Aids* fit into the ear canal and are available in two sizes. The *In-the-Canal (ITC)* hearing aid is customized to fit the size and shape of the ear canal and is used for mild or moderately severe hearing loss; A *Completely-in-Canal (CIC)* hearing aid is largely concealed in the ear canal and is used for mild to moderately severe hearing loss.

2. Cochlear implants : suggested in severe hearing loss cases (provide electrical signals right into the auditory nerve);

3. Other ways of coping with hearing loss:

- Alerting systems : flashing lights, vibration alarms, light devices added to safety; features, such as smoke detectors
- Special sound systems in theaters; closed captioning on TV;
- Lip reading teaching techniques;
- Modification/adaptation techniques: going to restaurants at a less busy time, asking for the “special of the day” in writing, asking people to face them as to allow for lip reading, etc.

Long-Term Care-types:

Sample fragment;

Type	What is being offered	Why choose it?
Assisted living communities	Living amenities; meals; recreational facilities and programs; health care; visiting nurses and other health care professionals;	For people who can take care of themselves, generally, but need some help with ADL; some residents may need care for their physical/psychological needs;
Retirement communities	Normal lifestyle, except the necessity of caring for your own home; No meals provided, unless ordered; No medical care provided, unless ordered	For people who can take care of themselves, but need help with household and/or yard activities;
Board and care facilities (rest homes)	Room (similar to dormitories); meals; help with ADL; some health care;	For people who need some help with their ADL's;

Basics of managing terminal illnesses

1. Physical management: daily care; in-home care; adult day care (community based programs designed to meet the needs of functionally and/or cognitively impaired adults); respite care (provides short term care for individuals with specific needs); residential care (facilities designed to meet the needs of those individuals who are not longer able to perform activities of daily living); hospice care;

2. Living wills: advance directive given by a person in which they express their wishes on how medical treatment may be if they are not able to decide for themselves at one point or another in the future; for example, a living will can contain directions on if a person wishes to be resuscitated or not;

3. Power of attorney: is a document in which a given individual appoints a trustworthy person to decide about their medical care, if they are ever in the situation to be unable to do so.

DNR: Do Not Resuscitate; *A statement in the medical record that cardiopulmonary resuscitation will not be performed.*

The Science of Nutritional Supplementation

TABLE OF CONTENTS

Introduction	183
Definitions and terminology	184
Forms of supplements administration	184
Comments on administration of supplements	185
Fiber supplementation	186
Types of fiber	186
Recommendations for fiber supplementation	186
Fermentation of dietary fiber	187
Supplementation recommendations	187
Facts and caution	188
Interactions	188
Beta-glucans	188
Fructo-oligosaccharides (FOS)	188
Lipids/fats	189
Introduction	189
Types of fatty acids	189
Functions of fatty acids	190
Types of fats	190
Notes on lipid components of the cellular membranes	191
Classification of oils	191
Indications for fatty acids supplementation	191
Evening primrose oil	192
Borage oil	192
Fish oils	193
Flax seed oil	193
FACTS ON EFA's and Supplemental Oils	194
Aminoacids supplementation	195
General information	195
Histidine	195
Tryptophan; 5-HTP	195
Lysine	196
Methionine; SAMe	197
Phenylalanine; DLPA	198
Threonine	198
Valine	199
Leucine and isoleucine	199

Alanine	199
Arginine; L-arginine	199
Asparagine	200
Aspartic acid	200
Cysteine and cystine; NAC	200
Glutamic acid	201
Glutamine; L-Glutamine	201
Glycine	202
Proline	203
Serine; Phosphatidylserine (PS)	203
Taurine	203
Tyrosine	204
Vitamins	204
Vitamin A	205
Beta-carotene	206
Vitamin B complex	206
Thiamin (Vitamin B1)	207
Riboflavin (Vitamin B2)	207
Niacin (Vitamin B3)	208
Pantothenic acid (Vitamin B5)	210
Pyridoxine (Vitamin B6)	210
Vitamin B ₁₂ (Cobalamin)	211
Biotin	212
Folic acid	213
Vitamin C	214
Vitamin D	215
Vitamin E	216
Vitamin K	217
Vitamin-like substances	218
Choline	218
Inositol	218
PABA	219
Minerals	219
Boron	219
Calcium	220
Chromium	221
Copper	222
Iodine	223
Iron	223
Magnesium	224
Manganese	225
Molybdenum	226
Phosphorus	226
Potassium	227
Selenium	228
Silicon	228

Vanadium	229
Zinc	229
Other popular supplements	230
Activated charcoal	230
Alpha-lipoic acid	231
Anthocyanins	231
Antioxidants	232
Bee products	233
Beta-sitosterol	233
Bilberry	234
Bromelain	234
Caprylic acid	235
Carnitine	235
Carotenoids	236
Catechins	237
Chitosan	237
Chondroitin sulphate	237
Coenzyme Q10	238
Creatine	238
DHEA	239
Digestive enzymes	239
Flavonoids	240
Gamma-oryzanol	241
Glucosamine	241
Glutathione	242
Grapeseed extract	242
Grapefruit extract	243
Green tea	243
Gugulipid	243
Ipriflavone	244
Lecithin	244
Lycopene	245
Melatonin	245
MSM	246
Naringin	247
Natural progesterone	247
Oregano oil	248
Policosanol	249
Probiotics	249
Quercetin	250
Soy isoflavons	250
Spirulina and kelp	251
Food sources of micronutrients	251
Bibliography	254

Comments on administration of supplements

When you recommend/advise on nutrients/supplements intake, always take into consideration the following factors:

- Assess the health status of your client's liver and kidneys, as they are detoxification organs;
- Always start with the lower possible dose (on the low end of a dosage range) and increase accordingly, based on improvement/plateau; if no change occurs, slowly increase the dosage; if improvement occurs, consider the given dosage the maintenance dosage and proceed from that moment on, based on clinical status; also, if no change occurs, consider the applicability of the particular supplement;
- As manufacturers' metrics are different from one company to another, use nutraceuticals "as prescribed" or "as directed" when you do not have a clear dosage range; when in doubt, call the manufacturer for details;
- Always read the insert of a nutraceutical, if available; check for inactive components; check for interactions with other nutraceuticals or drugs, before making your recommendation;

FRUCTO-OLIGOSACCHARIDES (FOS)

General information:

- Nondigestible dietary fibers that help keep the digestive tract by nourishing and promoting the naturally present, "friendly" bacteria (*Bifidobacteria* and *Lactobacilli* in particular; because of these properties FOS is considered a "prebiotic."
- **Natural food sources** of FOS include onions, garlic, and asparagus. FOS capsules, however, provide high concentrations of a purified form of this dietary fiber.

Recommendations:

- FOS may benefit people who suffer from irritable bowel syndrome, by exerting a regulatory action on bowel movement;
- Dysbiosis, candidiasis, by promoting health of "good flora";

Facts and Caution:

FOS supplements appear to be safe; occasionally, stomach cramps, gas, or bloating for first time users; generally, associated in supplementation forms with *probiotics*.

♣ FISH OILS

Rich in omega 3 content (EPA and DHA);

Recommendations:

- Prevention and treatment of cardio-vascular conditions (omega 3 oils seem to decrease platelets aggregation, which is a risk factor in development of cardio-vascular conditions);
- Beneficial for cases with depression, bipolar disorder and other psychiatric disorders; omega 3 oils are vital for the normal functioning of the brain;
- May prevent cancer development;
- Arthritis; exert anti-inflammatory effects;
- Skin conditions;
- Beneficial for Crohn disease sufferers, due to anti-inflammatory effects;
- Beneficial for asthma cases;
- Promote healthy development in children;

Recommended dosages: vary greatly among various types of supplements; take “*as prescribed*”; generally, between 1,000-2,000 mg once or twice a day;

Facts and Cautions:

- Use divided doses, to prevent belching and/or flatulence;
- Buy supplements from a reputable establishment, and look for sources from the cold Nordic seas, to avoid heavy metal contamination;
- Take fish oil supplements with meals;
- Oil supplements can rapidly go rancid; store the pills in the refrigerator;
- Belching, flatulence, nausea, diarrhea, and bloating may occur;
- Very high doses of fish oils may cause your body to emit a slightly fishy odor.

Interactions:

- Omega-3s may intensify the blood-thinning effect of anticoagulants (blood thinners), including aspirin when taken long term; ***avoid taking fish oil supplements two weeks before and one week after surgery.***

♣ CYSTEINE AND CYSTINE*

General information:

- Sulfur containing amino acids that help in skin development and have important roles in detoxification; (cysteine is present in keratin and also helps in collagen’s formation;
- Cysteine is precursor to glutathione;

- Vitamin B6 is necessary for cysteine synthesis;
 - Helps chelate heavy metals;
 - Binds with soluble iron, helping iron's absorption;
 - Cysteine has the potential of breaking down mucus in the respiratory tract;
- *Each molecule of cystine consists of two molecules of cysteine;*

Forms: L-cysteine; NAC (N-acetylcysteine);

L-cysteine recommendations:

- Rheumatoid arthritis;
- Atherosclerosis;

Caution:

- Cysteine may inactivate insulin, thus use with caution for diabetes cases;
- Cystinuria (genetic disorder) cases should avoid cysteine, because it may promote formation of cystine kidney stones.

NAC is a form of the amino acid cysteine; it enhances the production of glutathione;

NAC recommendations:

- Chronic respiratory conditions (as it has mucolytic (mucus breaking) properties);

NAC Cautions:

- Regular supplementation with NAC will increase the urinary excretion of copper; add 2mg copper and 25-30mg zinc/day, if you are taking NAC;
- NAC is most effective when taken on an empty stomach;

NAC suggested dosages: generally, 500 mg three times a day, in acute cases; 250 mg three times a day between meals in chronic cases; OR '*as prescribed*';

♣ PYRIDOXINE (VITAMIN B₆)

General information:

- Important for protein, neurotransmitters (such as serotonin), red blood cells and prostaglandins' production;
- Maintains appropriate immune function and hormonal balance;
- Participates in over 100 chemical reactions throughout the body.

Recommendations:

- Cardio-vascular protection (vitamins B₆ and B₁₂ and Folic acid help in processing homocysteine, which is a cardio-vascular risk factor);
- Carpal tunnel syndrome, by decreasing inflammation and increasing circulation to the affected areas;

- PMS and FBD(fibrocystic breast disease), by assisting the liver to dispose of excessive estrogen;
- Acne, by hormonal function regulation;
- Infertility (female), as it is a supportive nutrient for the female reproductive system;
- Anti-depressive, as it is involved in neurotransmitters's production;
- Asthma (asthmatics have been found to have lower than normal levels of B₆);
- Prevention of diabetic neuropathy;
- Chronic dizziness and tinnitus;
- Limit Parkinson disease's progression, as it is involved in dopamine production;

Forms:

- Pyridoxine hydrochloride;
- Pyridoxal-5-phosphate; most active form, but phosphate is lost at intestinal level, prior to absorption, thus the pyridoxine form is generally acceptable, if vitamin B₂ and Magnesium are available (necessary for conversion of pyridoxine for absorption) and if there is no liver disease .

RDA: 1.3 mg a day for men and women under age 50; 1.7 mg for men and 1.5 mg for women over 50;

Over dosage: No adverse reactions have been reported with high intakes of vitamin B₆ from foods. And when taking supplements, even long-term daily doses up to 100 mg are safe. Nerve damage can occur when doses of more than 2,000 mg are consumed daily for lengthy periods (two months or more). Fortunately, nerve damage is reversible once the vitamin is discontinued.

Recommended Dosages:

- CTS (Carpal Tunnel Syndrome): 50 mg three times a day;
- Asthma: 50 mg twice a day;
- PMS: 50mg twice a day;
- Female infertility: Take a vitamin B-50 complex pill and additional 50 mg B₆;

Facts and caution:

- Use 50 mg/dose, as the liver can not process more at one time;
- 200 to 300 mg daily over time (more than 2 months) has resulted in nerve damage and associated numbness, weakness, and loss of function in the extremities, which is reversible;

Interactions:

- High vitamin B₆ doses can decrease the effectiveness of anticonvulsant medication;
- Vitamin B₆ interferes with levodopa's absorption (prescribed for Parkinson);

♣ CALCIUM

General information:

- Most of the body's calcium is stored in the bones and teeth;
- The most abundant mineral in the human body;
- Circulating calcium promotes production of the hormones and enzymes that regulate energy release, digestion, and metabolism;
- Facilitates the movement of nutrients across cell membranes;
- Promotes cellular communication, aids muscle contraction, and is a factor in blood clotting;

Recommendations:

- Osteoporosis;
- High blood pressure;
- Pregnancy;
- May prevent development of colon cancer;
- May improve symptoms of PMS and endometriosis;
- May reduce heartburn;
- May relieve insomnia;
- May prevent migraines;

Forms: the difference between the various calcium forms is the percentage of *elemental calcium* present.

- *Calcium carbonate:* elemental calcium accounts for 40%; absorption depends on quality of product and digestive system status;
- *Calcium gluconate;* elemental calcium accounts for 9%; also lactate, phosphate;
- *Calcium citrate:* elemental calcium accounts for 24%; somehow better absorption than calcium carbonate;
- *Calcium citrate/malate (CCM);* better absorption than the previous two;
- *Microcrystalline hydroxyapatite (MCHC);* still debatable on absorption and solubility rate;
- *Coral calcium:* reputed to have better absorption, but not enough research to support this claim;
- *Calcium chelate;* good, but debatable absorption rate;

RDA:

- Men and women ages 19 to 50: 800-1,000 mg a day;

Recommended dosages: 1000-1200mg/day; take in divided doses, as it seems that your body can not absorb more than 500 mg /per dose.

Facts and caution:

- Supplementing calcium in the evening seems to benefit cases with osteoporosis; based on the circadian rhythm of bone loss;
- Take calcium with food to avoid development of kidney stones;

- Insufficient calcium intake/metabolism may cause bone loss and /or muscle spasms;
- Doses higher than 2,500 mg a day can cause kidney stones;
- Excessive calcium intake may impede zinc, iron, and magnesium absorption;
- Calcium carbonate may cause gas and constipation in some cases; switch to a different form of calcium;
- Calcium supplements made from bone meal, oyster shells, or dolomite may contain high levels of lead;
- Over age 65 use calcium citrate to avoid decreased absorbability due to decreased stomach acid levels;
- If you have thyroid or kidney disease, consult your doctor before taking calcium supplement;

Interactions:

- Calcium supplements may decrease antibiotics' absorption;
- Caution when using thiazide diuretics, as concomitant use can increase blood calcium to dangerous levels;

♣ COENZYME Q10

General information:

- Coenzyme Q₁₀ works along with various enzymes (thus the name "coenzyme);
- It is particularly abundant in high-energy-demanding cells, such as those found in the heart; it is also a powerful antioxidant;

Recommendations:

- Cardio-vascular conditions, such as angina, arrhythmia, high blood pressure, congestive heart failure;
- Cancer prevention;
- Prevention of Alzheimer disease and Parkinson;
- May complement cholesterol-lowering drugs;

Forms: look for capsules or tablets that contain coenzyme Q₁₀ in an oil base;

Recommended dosages: 50-100 mg once or twice a day; use *as prescribed*;

Facts and caution:

- Take coenzyme Q₁₀ with food; it is a fat-soluble compound;
- Keep coenzyme Q₁₀ out of direct light
- Rarely, coenzyme Q₁₀ can cause nausea, diarrhea, upset stomach, and headache or appetite loss.

Interactions: statins prescribed for high cholesterol; beta-blockers prescribed for high blood pressure may deplete or in other ways lower coenzyme Q₁₀ levels in the body

GLOSSARY EXCERPTS

G

GABA: gamma-aminobutyric acid; inhibitory neurotransmitter;

Galactagogue: compound that increases milk secretion;

Gamma-oryzanol: extracted from rice bran oil; it appears in grains such as barley and corn, as well; acts on the brain's control of digestion; may ease hot flashes and other symptoms of menopause;

Gastralgia: stomach pain;

GERD: gastro-esophageal reflux disorder;

Geriatrics: specialty of medicine dealing with diseases of the aged;

GI: gastro-intestinal;

Gerontology: the science that studies all aspects of aging;

Glossitis: inflammatory condition of tongue mucosa;

GLA: gamma linolenic acid; essential fatty acid found in EPO, borage oils;

Gliadin: gluten component;

Glucarates: substances that help body remove excessive estrogen;

Glucosilicates: plant compounds with cancer-prevention properties;

Glutathione: antioxidant substance, mainly produced by the liver;

Glutathione peroxidase: enzyme that works along with vitamin E to prevent free radical damage to cell membranes;

Gluten: protein in cereal grains with allergenic properties in sensitive individuals;

Glutenin: gluten component;

Goiter: benign enlargement of the thyroid gland;

Goitrogens: substances that promote goiter development;

GU: genitor-urinary;

Gugulipid: the resin of the mukul myrrh tree; cholesterol-lowering properties;

Gynecology: specialty of medicine dealing with diseases of the genital tract;

INDEX EXCERPTS

C

Cabbage, 13

Calcium, 220

Cancer, 166

Nutrition and holistic approach for, 169

Cantaloupe, 27

Caprylic acid, 235

Cardio-vascular system, 106
 Nutrients for, 106
Caregiving, 175
Carnitine, 235
Carotenoids, 236
Carrots, 14
Cashews, 44
Cataract, 142
Catechins, 237
Cauliflower, 14
Celery, 15
Cervical cancer, 167
Cherries, 27
Chickpeas, 41
Chicken, 53
Chestnut, 44
Chitosan, 237
Choline, 218
Cholesterol, high, see *hypercholesterolemia*
Chromium, 221
Clams, 51
Cobalamine, 211
Coconut, 45
Cod, 50
Coenzyme Q10, 238
Colon cancer, 167
Confusion, 111
Constipation, 160
Chondroitin sulphate, 237
Copper, 222
Corn, 36
Corns and calluses, 138
Crab, 51
Cranberries, 28
Creatine, 238
Cucumber, 15
Cysteine and cystine, 200