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## DETOXIFICATION

### Introduction

- Every living system – cell, organ, whole body or community of people – has to have two fundamental capacities:
  - Take in substances that provide energy and sustenance
  - Remove waste
- The act of taking sustenance means that metabolic waste is generated within the body. Breathing produces carbon dioxide as waste, which is exhaled; eating produces metabolic waste, which must be excreted.
- We are also exposed to substances that are both beneficial and detrimental – by breathing, eating, walking, drinking, and being at home or outside.
- Over a lifetime a person will consume 25 tons of food, most of which have pesticide applications (in 1999 alone – 1 billion pounds of pesticides = ½ billion Kg. was applied in the USA)
- Pesticide exposure has been linked to:
  - several types of cancers – including non-Hodgkin's lymphoma, leukaemia, multiple myeloma, soft-tissue sarcoma, prostate, pancreas, lung, ovary, breast, testes, Hodgkin's disease, liver, kidney, rectum, brain and neurological system, stomach and endometrial cancer
  - conditions such as diabetes mellitus, Parkinson's disease, asthma and hypothyroidism are also related to environmental exposures to toxic substances.

- In 2001, in the USA, it was estimated that between \$57 billion and \$397 billion was spent treating environmentally-related conditions.
- In the 21<sup>st</sup> century, as we are increasingly exposed to toxic compounds in the air, water and food, it becomes increasingly important that our ability to detoxify these substances, both exogenously (xenobiotics) and endogenously (products of metabolism), is of critical importance to our overall health. Many of these xenobiotics have not existed before in the world. How is it that some healthy bodies are often capable of managing these environmental exposures through complex systems of detoxification enzymes, and others cannot?
- We have not the time today to look at the horrifying statistics indicating the extent of environmental exposure to xenobiotics. The question is NOT whether we are toxic or not toxic because we all have accumulated a body burden of toxins.
- The question is:
  - Is a person's toxic burden a cause in her or his ill health?
  - If so, is this toxicity an obstacle to cure?
  - If "yes", how can we help him/her overcome this toxicity?
- **First** of all we need to understand how the body deals with toxins.
- **Second** what organs and systems are affected by common toxins?
- **Third** recognise signs & symptoms/telltale signs of toxicities!
- Traditional health care systems have recognised the fact that toxins accumulate in the body, are the cause of various health problems, and for centuries have devised means & ways of cleansing and detoxifying such as:
  - Simple water fast
  - Spas – including saunas, enemas, hydrotherapy treatments
  - Dietary modifications
- The study of detoxification mechanism processes is young and evolving. What has been established so far, are:
  - The role of genetic individuality in detoxification
  - Influences of diet, nutrition, environment and lifestyle on detoxification
  - The need to keep up with current data on food/drug and herb/drug interactions that affect detoxification.
- Let us have a look at how the body detoxifies itself – it is a wonder in itself. It is vitally important for us to understand the process of detoxification if we are to clean ourselves up.

### Terms

| Term                          | Definition  |
|-------------------------------|---|
| <b>Toxicology</b>             | The science that deals with reversible and irreversible noxious or harmful effects of (chemical) substances on living organisms.  |
| <b>Biochemical Toxicology</b> | A field of toxicology focusing on the biochemical mechanisms that underlie dysfunction or toxicity (i.e. molecular toxicology).   |
| <b>Xenobiotics</b>            | Chemicals or molecules that are foreign to the biological system, originating externally (e.g. toxic substances in the environment) or internally (e.g. food and metabolic products).   |
| <b>Detoxification</b>         | Any process of decreasing the negative impact of xenobiotics (toxic substances and nontoxins) on bodily process. The process of detoxification involves biotransformation of endogenous and exogenous molecules into excretable metabolites. The term <i>detoxification</i> is often used to refer specifically to the intracellular biotransformation process. |
| <b>Induction</b>              | Initiation of transcription of a gene leading to upregulation of a particular biochemical pathway.  |
| <b>Upregulation</b>           | The increased activity (following induction) of a particular biochemical pathway resulting in an increased concentration of the product(s) of that pathway.   |

## Detoxification

- Detoxification is the biotransformation of a lipophilic (fat loving) compound into a water-soluble compound that can be discharged in urine and faeces in two phases:
  - **Phase I** - the **Cytochrome P450 enzymes** biotransform lipophilic toxins (add oxygen) into intermediates and
  - **Phase II**, these intermediates undergo further biotransformation by a second series of enzymes, **conjugases** (add a water-soluble group), which turn these metabolites into water-soluble compounds

These two phases involve multiple reactions and multiple players.

How is the body able to handle such a range of compounds that it has never seen before in the world? This has posed a considerable challenge to scientists and clinicians. What is known is very complex:

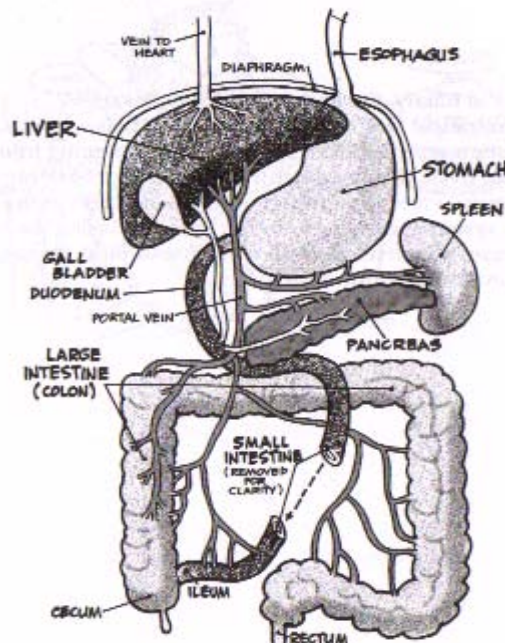
- A battery of enzymes, each with broad specificity, are involved in detoxification.
- There are “at least 57 human P450s, which are all encoded by separate genes ... and most cytochrome P450 genes are subject to genetic polymorphism”
- “Nearly fifteen P450s are involved in the metabolism of drugs and other xenobiotics chemicals ...” (See power point)

## BIOTRANSFORMATION

The conversion of toxic substances into non-toxic metabolites (and their subsequent excretion) takes place in two phases and primarily at two major sites.

- The majority of detoxification occurs in the liver and
- Secondarily in the intestinal mucosal wall.

THE LIVER - one would like to believe that the word “liver” comes from the word “live” and it is commonly quoted that “Love your liver and live longer”.



Let us look at Phase 1 & Phase 2 processes, which transform toxic substances into water-soluble & excretable substances through a series of chemical reactions.

### Bioinactivation and Bioactivation

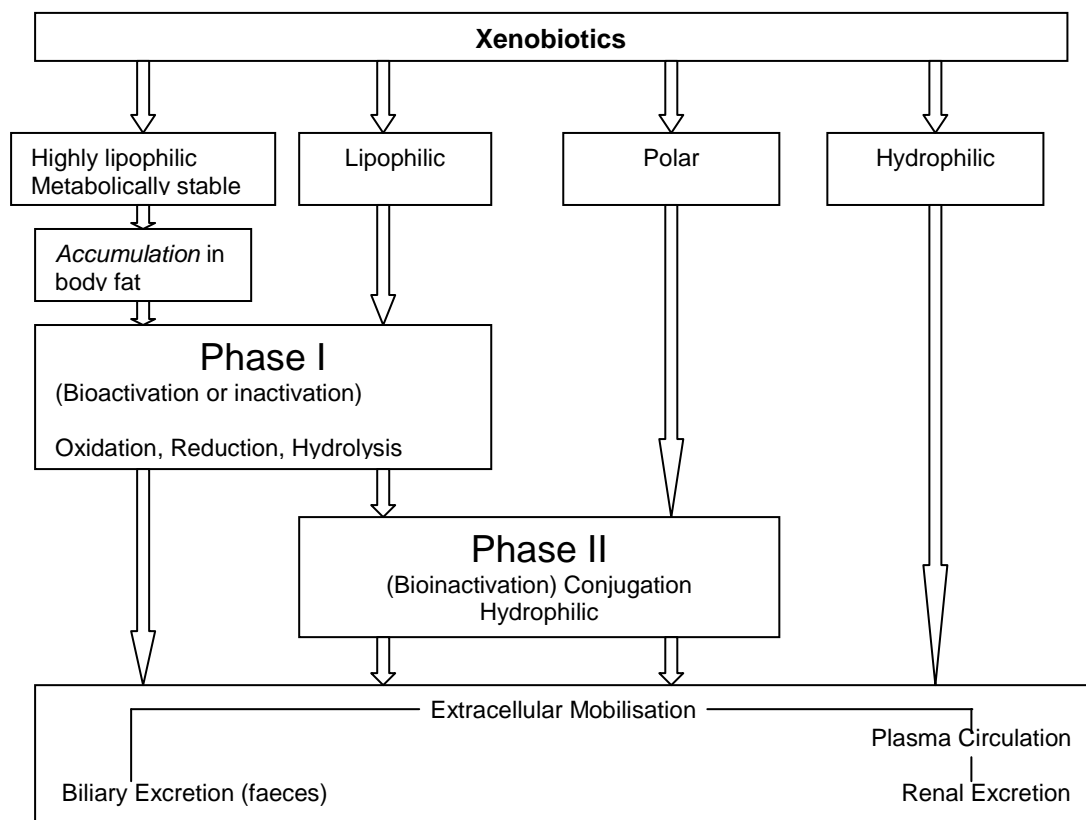
Biotransformation changes a molecule, increasing its water solubility and more likely hasten its excretion. Many biotransformation reactions result in *bioinactivation*. But biotransformation can also result in *bioactivation*.

- **Bioinactivation** – a decreased in intensity of the toxic effect of a molecule because of its increased water solubility
- **Bioactivation** - a molecule becomes more reactive and toxic than the original molecule after biotransformation by Phase 1 enzymes. Example, the organophosphate pesticide *parathion* is biotransformed into the intermediate metabolite *paraoxon*, by phase 1 oxidation reaction. Paraoxon is several times more potent (a neurotoxin) than its parent molecule parathion, and can cause damage if it interacts with protein or DNA and RNA.

All organisms are exposed - constantly and unavoidably - to exogenous xenobiotics and endogenous by-products of metabolism, which can be toxic. Fat solubility (lipophilicity) of these substances makes them easily absorbable but very difficult to eliminate. They can only be excreted if they are biotransformed into water-soluble chemicals by enzymes in the liver and other tissues. Also these highly lipophilic xenobiotics tend to be readily absorbable in lipid cell membrane and accumulate in fatty tissues particularly those lipophilic xenobiotics resistant to biotransformation such as PCBs and DDT.

**Xenobiotics** can be:

1. Highly lipophilic
2. Lipophilic
3. Polar
4. Hydrophilic



### Phase I Reactions

- 1<sup>st</sup> enzymatic defence against foreign compounds by oxidation, reduction and/or hydrolysis reactions
- This is the beginning of the transformation process of detoxifying xenobiotics such as petrochemical hydrocarbons, many medications and some endogenous substances (including steroid hormones and other end products of metabolism that would also be toxic if allowed to accumulate).
- In most cases the phase I biotransformed compounds have to undergo phase II conjugation reactions. In some cases, the compound may be eliminated directly after the phase I reaction – as shown above.
- Many of the phase I enzymes have affinities for different substrates – most common are the cytochrome P450 superfamily of mixed function oxidases. Many forms of P450 enzymes have been isolated and their DNA sequences determined, providing evidence that these P450 enzymes are distinct gene products. They are “involved in the metabolic oxidation, peroxidation and reduction of many endogenous and exogenous compounds including xenobiotics, steroids, bile acids, fatty acids, eicosanoids, environmental pollutants, and carcinogens” and have been linked to the “development of numerous diseases and disorders including cancer and cardiovascular and endocrine dysfunction .... “
- The major site for Phase I is the liver; but, significant cytochrome P450 activity occurs in the gut wall, kidneys, lungs, skin and even brain.

### Phase II Reactions

The major phase II detoxification activities in humans include:

- Glucuronide conjugation (glucuronic acid is used in enzymatic reactions)
- Sulfate conjugation (active sulfate is used in enzymatic reactions)
- Glutathione conjugation (glutathione in enzymatic reactions)
- Amino acid conjugation (several amino acids are used)
- Acetylation (Acetyl Co A)
- Methylation (methyl groups are used)

Biotransformed molecules are combined with endogenous hydrophilic compounds, creating substances with sufficient hydrophilic character to allow rapid excretion.

### Clinical Implications of Biotransformation

- Cytochrome P450 enzymes oxidise the xenobiotic molecule and transform it into a reactive electrophile ready for conjugation with a polar co-factor during phase II of the detoxification process.
- The biotransformed xenobiotics of Phase I are most often more reactive than their parent molecules – so this process plays a significant role in establishing or increasing the toxic nature of a xenobiotic.
- This reactive biotransformed intermediate may exert toxic effects within the liver (or systemically if it escapes from the hepatocytes) if not immediately transformed further by one of the several conjugating enzymes (phase II detoxification).
- Phase I detoxification requires little nutritional support to be fully active. In fact during fasting or starvation, phase I activity may increase substantially while circulating xenobiotics are released from adipose and lean tissue, resulting in a significant increase in toxic stress. Therefore, traditional approaches to fasting or detoxification involving minimal nutritional support for an extended

period of time may have negative clinical consequences in chronically ill people.

- For excretion of xenobiotics to be effective, phase I activity requires antioxidant support and phase II activity requires specific nutritional support.

### Importance of Balancing Phase I and Phase II Detoxification

- The two phases must be functioning in balance to complete the detoxification process since the metabolites produced by phase I can be more harmful or toxic than the original substance – they can cause tissue damage.
- Also the amounts and types of steroid, fatty acids and other endogenous molecules involved in cellular communication can also be greatly influenced by altered or compromised detoxification status of an individual

### The Role of the Intestine in Detoxification

- Liver is the site of the majority of detoxification activity for both endogenous and exogenous compounds.
- But the GI lining is the first point of contact for majority of xenobiotics. With the GI tract processing 25 tons of food over a lifetime, this represents the largest load of antigens and xenobiotics confronting the human body. It is also the body's first contact with many orally consumed drugs.
- Consequently the GI tract has developed a complex set of physical and biochemical systems to manage this load of exogenous compounds.
- Several factors influence how much of a chemical ends up in the systemic circulation, thus requiring detoxification by the liver.
- The GI tract provides a physical barrier to exogenous components.
- But it also influences detoxification in several other ways:
  - Gut flora can produce compounds that either induce or inhibit detoxification activities. For example – pathogenic bacteria can produce toxins that enter the circulation and increase toxic load and in the process, called enterohepatic recirculation, gut flora also have the ability to remove some of the conjugation moieties thus reverting the xenobiotic to its original form and re-enter the circulation, leading to an increased toxic load.
  - Enzymes CYP3A4 (which detoxify most drugs, aflatoxins and food mutagens) and the antiporter activities have been found in high concentrations at the tip of the villi in the intestines. Adequate first-pass metabolism of xenobiotics by the GI tract requires integrity of the gut mucosa. Compromised barrier function of the mucosa, such as leaky gut, will allow xenobiotics to get into circulation without an opportunity for detoxification. Support for healthy gut mucosa is instrumental in decreasing toxic load.
  - The **antiporter activity** has been re-defined as the **phase III** detoxification system. Antiporter activity is an important factor in the first-pass metabolism of pharmaceuticals and other xenobiotics. It is an energy dependent pump that pumps xenobiotics out of a cell, thereby reducing the intracellular concentration of such substances. Since many of the detoxification enzymes are located at or near the cell membrane barrier, if a xenobiotic is not metabolised the first time round, it is taken into a cell, the process of pumping it out of the cell and out into the intestinal lumen and then taken into the cell again (a recirculation process) gives the cell a second opportunity to metabolise the substance before it gets too far within the cytosol,

where it can do damage. (This can be overexpressed in some cancer cells, allowing those cells a protection against chemotherapy.)

### **Regulation of Detoxification Activities**

A number of factors influence the activity of the enzymes involved in detoxification. Specific detoxification pathways may be induced or inhibited, depending on the presence of various dietary or xenobiotic compounds, the age and sex of the individual, lifestyle habits such as smoking and genetics. Disease can also influence – in some disease states, detoxification activities appear to be induced or upregulated and in some other states they may be inhibited from acting or not produced at high levels.

### **Induction Activities**

1. A high toxic load can induce the phase I and phase II, leading to a greater amount of enzymes and faster rate of detoxification. Inducers can upregulate selectively, affecting only one enzyme or one phase of detoxification, or broadly affecting multiple activities.
2. For example:
  - a. Polycyclic hydrocarbons from cigarette smoke and aryl amines from charbroiled meats result in dramatic induction of CYP1A1 and CYP1A2 enzymes. This leads to a substantial increase in phase I activity with little or no induction in phase II enzymes.
  - b. Taking phenobarbital for epilepsy can eventually lead to chronic induction of phase I. If phase II enzymes are not increased, this can lead to a higher level of reactive metabolites that can cause damage to DNA, RNA and proteins.
3. Many compounds in the flavonoid family (found in fruits and vegetables) are capable of inducing multiple phase II activities. Example ellagic acid in red grape skin has been shown to induce many phase II enzymes while inhibiting phase I activity. Cruciferous vegetables, garlic oil, rosemary and soy all contain compounds that can induce several phase II enzyme activities. Commonly glutathione S-transferase and glucuronyl transferases are co-induced by these multifunctional inducers. (See list at the end of notes)

### **Inhibition Activities**

- Both phase I and phase II activities can also be inhibited. Inhibition can occur by competition between two or more compounds for the same detoxifying enzyme.
- Increased toxic load can lead to inhibition of a number of compounds by simply overwhelming the systems and competing for multiple detoxification enzyme activities – a process called competitive inhibition. For example grapefruit juice contains the flavonoid naringenin, which inhibits CYP3A4, which is very important in drug metabolism. In fact a lot of research has been done and published on different enzymes and their specific metabolism of different drugs.

### **Detoxifying Enzymes and Genetic Polymorphism**

- Research has established that a widespread genetic polymorphism for the expression of cytochrome P450 exist within the human species. Great variations in individual metabolising ability for all detoxifying pathways exist – both in phase I and phase II. A well described polymorphism is the low activity form of CYP2D6, an enzyme that is an important metaboliser of many narrow-

spectrum drugs, including antiarrhythmics, antidepressants and antipsychotics. Individuals with this polymorphism (10% of Caucasian population) are described as poor metabolisers (PM) – suffer more side effects and need lower dosages. Those who metabolise faster (extensive metabolisers EM) will need higher dosages.

- Heritable polymorphisms are also known for several conjugating enzymes (phase II detoxification) that are extensively involved in the metabolism of exogenous chemicals. For example, genetic polymorphism of the glutathione-S-transferase (phase II glutathione conjugation) enzyme family are known to occur – regarded as a significant factor conferring susceptibility to environmental toxins.

### **Metallothioneins and Genetic Polymorphism**

- One of the most important detoxification systems in all species, from bacteria to humans, depends upon the production of a family of at least four different proteins known as metallothioneins (MT). MTs are highly unusual proteins composed of about 30% cysteine. They are responsible for storage, transfer, and detoxification of intracellular metal ions. The primary role of MT in the absence of toxic metals is the transport and short-term storage of zinc and copper. But it is also important in protection against and elimination of toxic metals.
- MT is known to efficiently bind several toxic metals (particularly cadmium and mercury) and act as a transporter of the toxic metal to the liver or kidneys where glutathione conjugation and subsequent excretion of the toxic metal may then take place – thus preventing toxic metals from reacting with other biomolecules

### **Age, Gender and Disease Influences**

Several other factors also influence expression and the activity of many detoxification enzymes.

- In the foetus – phase I CYP3A enzymes and the phase II enzymes catalysing glucuronidation, sulfation, and glutathione conjugation are present. At birth these enzymes are capable of catalysing most biotransformation reactions – though the rate is generally slower than in adults. Within the first two weeks of life, phase I and II detoxification systems become more fully expressed.
- However as the body ages, the phase I and II detoxification pathways decline in efficiency and effectiveness, likely contributing to many of the health effects of ageing.
- Gender also affects the type, amount and activity of various detoxification enzymes. The CYP3A4 family of detoxification enzymes is particularly sensitive to hormones. Premenopausal women and pregnant women tend to have increased levels of CYP3A4 activity compared to men and postmenopausal women.
- Disease and health status of the individual also affect detoxification activities. Impairment of normal liver function – alcoholic disease, fatty liver disease, biliary cirrhosis and hepatocarcinomas can lead to lower detoxification in general. Some conditions can actually increase or induce detoxification system function.
- The phase I and phase II enzyme activities are localised differently within a cell. Phase I activities are associated with membrane, but the majority of phase II activities occur in the cytosol (fluid component of the cytoplasm). Different types of phase I and phase II activities may be localised differently in the organ systems as well, which is the case in the liver. This

compartmentalisation means that a disease that influence one region of the liver may affect some activities more than others. Moreover, influences on cell membrane integrity (for example, from dietary lipids or oxidation of membrane lipids) could influence phase I activity more than phase II. Therefore, the amount of decrease in detoxification activity resulting from disease or loss of integrity of the tissue may vary from one isozyme to another..

- Induction of various P450 isozymes can be detrimental when carcinogens are not capable of causing genetic damage until they undergo activation to a reactive (electrophilic) intermediate. For example it has been shown that the risk for hepatic carcinoma is associated with the degree of activity of a particular isozyme of the cytochrome P450 system. Another example is seen in individuals with a high inducibility phenotype for phase I CYP1A1. These individuals appear to have a higher risk for cancer, regardless of exposure to smoking or other known carcinogens. Since many cancers can be related to environmental exposure or dietary intake, it is apparent that individual detoxification ability can be an important factor in their development.

### Effects of Medication

The consequences of defective drug metabolising enzymes and pathways in a patient are varied:

- Inefficient elimination of an active drug or toxic substance may cause side-effects.
- Inefficient activation or increased elimination of a drug may make it ineffective.
- The outcome can be - symptoms of toxicity, exacerbation of symptoms in chronic conditions, etc

**“The detoxification system in humans is extensive, highly complex, and under myriad regulatory mechanisms. Until recently, science has had difficulty calculating and objectively analysing the individual response to toxic compounds. In any large population exposed to the same levels of carcinogens, some individuals will develop cancer while others will not. The variability that one finds here and in other diseases appears to be associated, in part, with the individual’s ability to detoxify various pro-carcinogens and other xenobiotics. Therefore, it is not only the level of the toxin in the environment, but also the total amount of toxin in the individual – and his or her response to the load – that is significant.”**

### Toxic Load

- Given the ubiquitous nature of chemicals in the environment, it is likely that *single* exposure is more the exception than the rule. Also, despite considerable research, we actually know very little about the true extent of chemicals on human function, because so little research is done on chemical synergy, so that determining the effects of chemicals on human function is extremely difficult.
- However, assessing both the sources of foreign substances and the patient’s ability to deal with and process those foreign substances is central to the question of how toxicants and xenobiotics differently affect humans. These are the factors that influence the total load:
  - Infections (streptococcus, pseudomonas, parasites, etc.)
  - Toxins (aflatoxin, fusarium, penicillin toxins, ergot toxins, etc.)
  - Biological inhalants (molds, algae, pollens, foods, etc.)
  - Physical phenomena (electromagnetic fields, ionising radiation)

- Lifestyle (drinking, smoking, etc.)
- Mechanical problems (biomechanical dysfunction, such as nasal, intestinal, or other obstruction)
- Hormonal aberration (DHEA, cortisol, oestrogen, progesterone, testosterone, etc.)
- Psychosocial factors (stress, coping skills, belief systems, psychological trauma)
- The factors above are influenced by nutritional status. Nutrient abnormalities are found to be widespread amongst those who suffer from chemical sensitivities. Therefore nutrient supplementation is central to restoring physiologic balance as well as reducing total load.

There are a number of common warning signs indicating that toxicity may be a factor for patients:

- A history of increasing sensitivity to exogenous exposures (toxic xenobiotics)
- Abundant use of medications
- Significant use of potentially toxic chemicals in the home or work environment
- Musculoskeletal symptoms (similar to fibromyalgia)
- Cognitive dysfunction
- Unilateral paresthesia
- Autonomic dysfunction and recurrent patterns of oedema
- Worsening of symptoms after anaesthesia or pregnancy
- Paradoxical responses or sensitivity to medications or supplements

#### **Specific Clinical Examples:**

1. Gilbert's syndrome – genetically-induced, nutritionally-exacerbated disorder that affects the way bilirubin is processed by the liver, causing jaundice
2. CFS has been found to be related to toxicity.
3. Encephalopathy – a genetic defect in the glutathione transferase enzymes, and pancreatitis – associated with upregulation of the cytochrome P450 enzymes.
4. Chronic degenerative diseases – e.g. Parkinson's disease has shown defects in the ability to adequately metabolise sulfur-containing xenobiotics. Connection to Alzheimer's and other motor neuron diseases have also been made. Research has also supported the relationship between compromised detoxification ability, lupus erythematosus and rheumatoid arthritis. Genetic make-up is certainly a major factor, but strong support for nutritional and environmental factors is vital.
5. Detoxification and hormone-related conditions – since many xenobiotics are lipophilic, many accumulate in the body in the highest concentrations in reproductive, liver and adipose tissues. Human seminal fluid may contain compounds such as pentachlorophenol, hexachlorbenzene, DDT metabolites, and PCBs. Combinations of xenobiotics may have effects on hormonal activity far beyond the sum of their individual activities. For example, women who smoke – thus inducing certain phase I isoenzymes, which are involved in the detoxification of oestrogen, may well show low serum oestrogen level and increased incidence of osteoporosis compared to those who do not smoke.

#### **Supporting the Detoxification System**

- Remove food and beverages that contain toxins, food allergens, or antigenic challenge.

- Eliminate or reduce ongoing toxic exposures in home and/or workplace.
- Meet basic nutritional needs, including adequate, high-biological-value protein content.
- Provide increased amounts of the nutrients that function as cofactors for, or are otherwise required in, the enzymatic steps that occur in the biotransformation of toxic substances.
- Provide adequate hydration with clean water to promote elimination of biotransformed molecules.
- Consider intervention such as sauna or chelation, when specifically indicated to reduce toxic load.

#### Nutrients critical to phase I and phase II detoxification include:

- Sufficient sulfation reactions require (among other things) vitamin A, adequate protein in the diet, and adequate sources of dietary sulfur (sulfur-containing amino acids, and foods such as garlic and onions).
- Glucuronidation reactions require magnesium and may be inhibited by smoking, fasting, and possibly high fructose intake. As this is a membrane-bound enzyme system, the integrity of the lipid bilayer is important for efficient glucuronidation i.e. adequate essential fatty acids.
- Glutathione reactions are some of the most crucial in the deactivation of xenobiotics. Synthesis of the glutathione cofactor requires adequate vitamin B6 and B12, magnesium and folate. Glutathione transferases may be inhibited by a number of dietary constituents, including alcohol and plant phenols, or induced by brassica family compounds. Amino acid conjugation may be enhanced by administration of the cofactor amino acids (e.g. glycine or taurine)

#### Plant derived compounds that influence detoxification

|                   |   |
|-------------------|---|
| Flavonoids        | <ul style="list-style-type: none"> <li>- <i>Naringenin</i> in grapefruit is a powerful inhibitor of CYP1A2 and CYP3A4</li> <li>- <i>Rutin</i> and <i>quercetin</i> + <i>vit. C</i> and <i>E</i> protect against oxidation injury induced by glutathione deficiency. <i>Rutin</i> and <i>quercetin</i> inhibit cytochrome P450 activity.</li> <li>- <i>Tangeretin</i> and <i>nobiletin</i> (in orange juice) induce CYP3A4.</li> <li>- Polyphenols from <i>rosmarinus officinalis</i> are powerful antioxidants and some stimulate the phase II detoxification enzymes glutathione-S-transferase and quinone reductase and suppress xenobiotic damage from xenobiotics.</li> </ul> |
| Monoterpenoids    | e.g. d-limonene, derived from citrus foods, have a number of interesting effects on the detoxification systems – increases the levels of CYP2C but inhibits the activity of CYP2E1. These monoterpenes induce the phase II glutathione and glucuronidation activities.  |
| Curcumin          | From <i>curcumin longa</i> (turmeric) has a wide range of biological activities + a very powerful antioxidant, anti-inflammatory agent, and anti-mutagen. Induces glutathione production and glutathione-S-transferase activity and may inhibit some cytochrome P450 activities.  |
| Forskolin         | From <i>Coreus forskohlii</i> , increases the cAMP and indirectly assist with lipolysis and therefore the release of toxins, which are stored in adipose.   |
| Indole-3-carbinol | Found in brassica family of vegetables – inhibit the activity of CYP1A1 and CYP1A2 isoforms in humans but enhance phase II glutathione pathway  |

#### Summary (from the institute of Functional Medicine)

- The complex system of the detoxification enzyme systems generally function adequately to minimise potential damage from xenobiotics.

- Dysfunction may occur when these systems are overloaded or imbalanced.
- Studies of detoxification function show that the enzymes that control the phase I and phase II processes vary significantly from person to person, even in healthy people – confirming Roger William’s concept of “biochemical individuality” (20<sup>th</sup> century)
- Differences in detoxification capacities based upon individual genetic predispositions, environmental exposures, and nutritional deficiencies can have a profound effect upon a person’s susceptibility to a wide variety of diseases (and upon our ability to respond to interventions, whether pharmaceutical, nutritional, or botanical).
- Accumulated data suggest that an individual’s ability to remove toxins from the body may play a role in the etiology or exacerbation of a range of chronic conditions and diseases. Some studies have suggested an association between the ability of the body to adequately transform toxic xenobiotics and metabolites, and the etiology of various puzzling disease entities such as CFS, fibromyalgia and multiple chemical sensitivities. In chronic neurologic symptoms, such as Parkinson’s disease and certain types of cancers – impairment of the detoxification system may be involved. The xenobiotics implicated in cancer causation include polyaromatic hydrocarbons ((PAH) and asbestos.
- Xenobiotics may act as immunotoxic agents, suggesting a biochemical connection between the immune, nervous and hepatic detoxification systems.
- Linking detoxification to a specific disease in a research study is nearly impossible – because the detoxification enzyme system is so complex and individualised, and is involved in supporting so many functions in the body.
- How many of the diseases that we consider idiopathic (of unknown origin) might be linked to atypical detoxification reactions? Disordered detoxification may have wide-ranging impact upon hepatic, renal, cardiovascular, neurological, endocrine, and immune system function.
- Identifying slow, fast, or otherwise imbalanced individual detoxification pathways can be extremely important. Laboratory assessment of detoxification gives the health professional more precise and definitive tools to assessment, a better understanding of an individual’s unique metabolic detoxification capacity, and the opportunity to tailor nutritional support and environmental factors to reduce symptoms associated with metabolic toxicity.

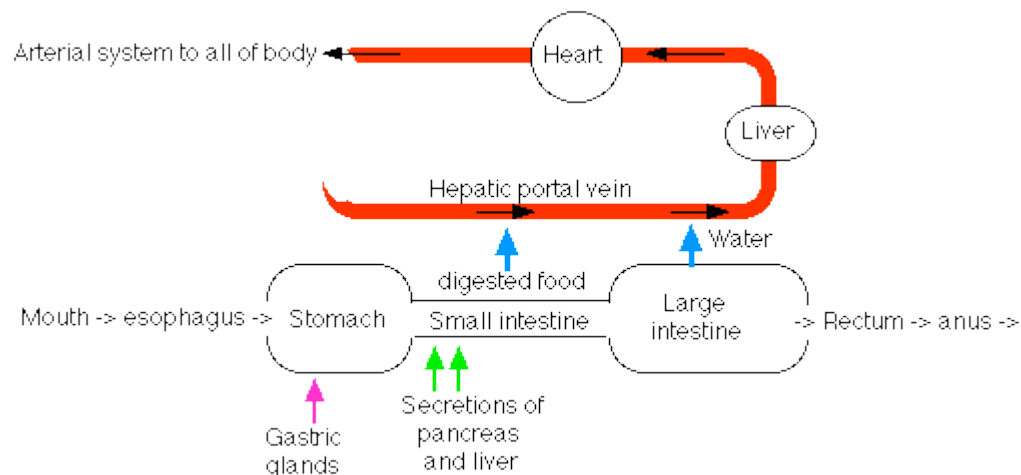
## Botanicals for Detoxification

From the notes of Dr. George Mouton – [www.gmouton.com](http://www.gmouton.com)  
(Choleretic – production of bile; Cholagogue – expulsion of bile)

(Best three liver herbs are indicated in blue)

| Botanicals  |  |
|---|--|
| <i>Silybum marianum</i> ( <i>milkthistle</i> )<br>“wild artichoke” (9058) | Strong choleretic Strong cholagogue Major hepatic protector<br>Good hepatic regenerator Anti-hepatitis (viral or cirrhotic)<br>strong hepatic stimulator |
| <i>Desmodium adscendens</i>   | Hepatic protector Major hepatic regenerator Anti-hepatitis<br>(viral or cirrhotic) General detoxifier Light cholagogue                                   |
| <i>Chelidonium majus</i> (87)   | Choleretic Very strong cholagogue Biliary colic’s best remedy<br>Hepatic detoxifier  |
| <i>Chrysanthellum americanum</i>  | Strong cholagogue Hepatic detoxifier (sold in US bars to<br>lower alcohol blood levels faster)   |
| <i>Cynara scolimus</i> ( <i>artichoke</i> )<br>(9058)                     | Strong choleretic Very strong cholagogue Hepatic detoxifier<br>Hepatic protector Hepatic regenerator Anti-hepatitis                                      |
| <i>Raphanus niger</i><br>(9058)   | Strong cholagogue Hepatic cleanser Hepatic stimulator<br>(Sulfur compounds ++)   |
| <i>Taxacum officinale</i>   | Choleretic Strong cholagogue Hepatic cleanser  |
| <i>Phyllanthus amarus</i>   | Viral DNA polymerises inhibitor (HBV, HCV, WHV) Anti-<br>hepatitis viral Hepatic protector   |
| <i>Arctium lappa</i>  | Choleretic Cholagogue Hepatic & kidney detoxifier Mild<br>hepatic stimulator   |
| <i>Chionanthus virginicus</i>   | Strong cholagogue Mild hepatic stimulator  |
| <i>Viola tricolor</i>   | Mild hepatic dertoxifier   |
| <i>Brassica oleracea</i>  | General and hepatic dertoxifier (sulfur compounds ++)  |
| <i>Curcuma longa</i> ( <i>Curcumin</i> )<br>(114 198)                     | Choleretic Cholagogue Hepatic cleanser Hepatic protector   |
| <i>Curcuma zedoaria</i>   | Cholagogue Hepatic cleanser Hepatic protector  |
| <i>Sassafras albidum</i>  | Hepatic detoxifier   |
| <i>Allium sativum</i> ( <i>garlic</i> )                                   | General detoxifier (sulfur compounds ++)   |
| <i>Allium cepa</i> (9054)   | General detoxifier (sulfur compounds ++)   |
| <i>Acacia catechu</i>   | Hepatic cleanser   |
| <i>Uncaria gambier</i>  | Hepatic cleanser   |
| <i>Glycyrrhizia glabra</i> (7500)   | Major hepatic protector General detoxifier Anti-hepatitis viral  |
| <i>Fumaria officinalis</i>  | Choleretic Cholagogue Calms biliary colic Liver tonic<br>Hepatic protector   |
| <i>Berberis vulgaris</i> (46)   | Choleretic Cholagogue Liver tonic Liver protector  |
| <i>Peuma boldus</i>   | Choleretic Cholagogue Liver tonic  |

## The hepatic portal system



The capillary beds of most tissues drain into veins that lead directly back to the heart. But blood draining the intestines is an exception. The veins draining the intestine lead to a second set of capillary beds in the liver. Here the liver removes many of the materials that were absorbed by the intestine:

- Glucose is removed and converted into **glycogen**.
- Other **monosaccharides** are removed and converted into glucose.
- Excess amino acids are removed and **deaminated**.
- The amino group is converted into **urea**.
- The residue can then enter the pathways of **cellular respiration** and be oxidized for energy.
- Many nonnutritive molecules, such as ingested drugs, are removed by the liver and, often, detoxified.

The liver serves as a gatekeeper between the intestines and the general circulation. It screens blood reaching it in the hepatic portal system so that its composition when it leaves will be close to normal for the body.

Furthermore, this homeostatic mechanism works both ways. When, for example, the concentration of glucose in the blood drops between meals, the liver releases more to the blood by

## How to Approach Detoxification

Healthy bodily function requires that the body is able to differentiate between the good and the bad in our environment:

- the body can absorb nutrients and take them into circulation to nourish cells throughout the body AND
- at the same time keep out damaging substances i.e. perform optimal elimination of waste

## How do we deal with toxicity?

1. "Genetic testing" is available for those who want to determine their genetic polymorphism. This is useful for the very ill since we know that "genetic influence" is an important component of detoxification.
2. Otherwise, assessment of the toxic load can be made from a very comprehensive and detailed personal history – medical, diet, lifestyle, environment (home, work place, psychological), etc
3. A first step is a detailed assessment of the digestive system – using questionnaire and SCIO – and correcting any dysfunction in the digestive system before embarking on a "Detoxification Programme". This may take some time and a few SCIO sessions. Deal with the 5-R - Remove, Replace, Repopulate, Repair and Rebalance.
  - a. **Remove** - Pathogenic organisms (fungi, parasites, bacteria, H.Pylori)
  - b. **Remove** - Allergenic foods
  - c. **Replace** - Hydrochloric acid
  - d. **Replace** - Digestive enzymes –
  - e. **Replace** - Lipotropic factors
  - f. **Repopulate** - Bowel flora
  - g. **Repair** - Leaky gut, inflammatory bowel
  - h. **Rebalance** - diet, attitude, lifestyle (+ regular bowel movement)
4. The other eliminatory organs – kidneys, lungs and skin – must also be supported.
5. Liver and gallbladder must be supported
6. Adrenal and thyroid glands must be supported
7. Rectify nutrient deficiencies
8. Only then embark on a "Detoxification" programme

## The Significance of the Digestive System

1. Pathogenic organisms produce a tremendous amount of toxins (endogenous) such as indoles, phenols, skatol, xenobiotics and a lot of other toxic substances – these will place a great load on the GI tract and the liver. For example, they can produce beta glucuronidase enzyme, which separate glucuronic acid from oestrogen so that oestrogen is reabsorbed in the gut leading to oestrogen dominance and increasing the risk of breast, prostate cancer, infertility, endometriosis etc.
2. Allergenic foods produce antigens and immune complexes which can get lodged in different parts of the body and produce inflammation and pain.
3. Hydrochloric acid is required for protein digestion & release of minerals & nutrients, protection against microbes in food, production of Intrinsic Factor for vitamin B12 absorption, bicarbonate stimulation etc.
4. Digestive enzymes are vital for the proper digestion of foods for proper absorption of essential nutrients.

5. Adequate indigenous friendly bacteria must be present – they neutralise toxins and toxic substances, keep the pathogens under control, produce some vitamins (Bs and K), antibiotic-like substances etc.
6. Leaky gut and bowel inflammation allow substances, which are not supposed to be absorbed, into the body. The GI mucosa is a major first line of defence against unwanted toxins, antigens and microbes.
7. Regular bowel movement is a prerequisite. Otherwise the toxins are just going to be reabsorbed in the intestine and recirculate in the body.

We cannot really dissociate the liver from the gut for all these reasons. A fully functioning digestive system will provide us with the nutrients that the body needs and particularly the liver, which is one of the most metabolically active organs in the body. The liver simply cannot function properly without adequate nutrients – antioxidants, amino acids, minerals and vitamins.

It is therefore important to correct the digestive function before any kind of detoxification. And since the kidneys, lungs and skin are the other organs of elimination, they too need to be functioning optimally before detoxification. It does not make sense to get rid of toxins until the channels of elimination are functioning to enable them to be excreted.

## Introducing Energetic Medicine for Detoxification

### Fact 1

The QXCI/SCIO is the biggest medical software in the world and it gets bigger. One could spend a lifetime learning how to use it.

### Fact 2

Knowledge and information are readily available – books, internet, news, seminars, conferences and other forms of communication – always keep informed.

### Fact 3

The human body is immensely complex and wonderful at the same time. Scientists are still unravelling its workings and will be doing so for a long time. For example, when scientists started the Gnome Project they stipulated there were some 500 000 genes in the human body. After the completion of the Gnome Project they have now confirmed that there are only between 25 000 and 30 000 genes

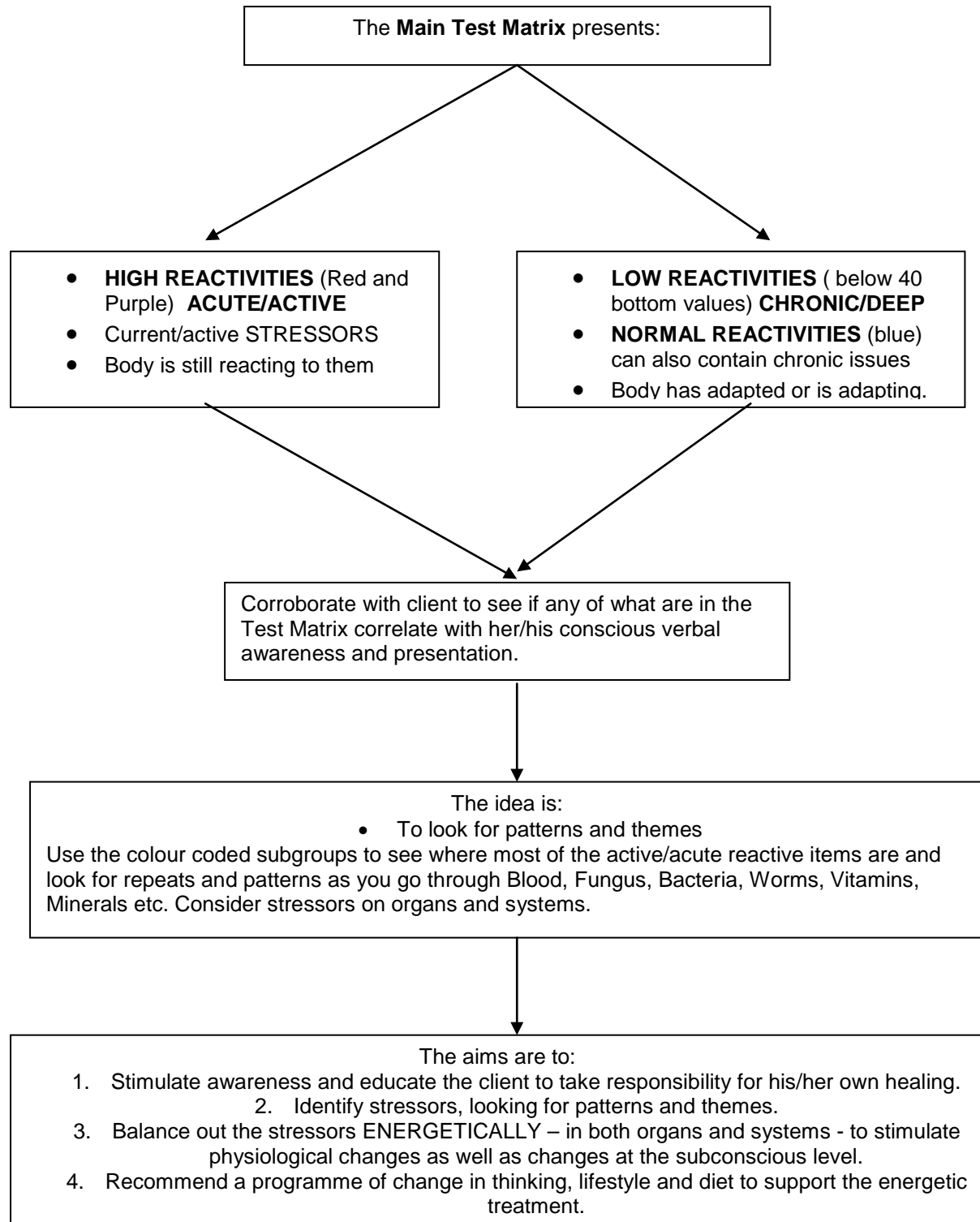
### Fact 4

Diseases and illnesses are also complex since they occur within the complexity of the human body and factors internal and external have a bearing on them. Arthritis in two different people can have completely two different underlying causes. “... **one disease may have multiple causes, and one initiating factor may cause multiple diseases.**”

## My Deduction/Conclusion

- It makes no sense to have a **PROTOCOL** for a disease or as a form of treatment since no two persons are the same.
- It makes more sense:
  - to understand the disease,
  - to use the knowledge that you have, creatively and
  - to treat the person.

**IT IS NOT THE KNOWLEDGE THAT IS IMPORTANT. IT IS WHAT YOU DO WITH THE KNOWLEDGE THAT DISTINGUISHES YOU FROM THE OTHER THERAPISTS AND SETS YOU APART AS A TRUE AND HOLISTIC PRACTITIONER. THINK Laterally AND DO NOT BE AFRAID TO BE CREATIVE. GOOD LUCK!**



The **SOC (Suppression and Obstruction to Cure)** index is of the utmost importance and must be explained at length. In particular, the implications of

- alcohol, smoking, medications, amalgam fillings and allergies;
- diet and water and
- lifestyle – exercise and toxic exposure,
- stress – social, emotional, psychological, physical

on one's health and that without reasonable changes in the right direction, energetic rebalancing is not going to hold. The client must take responsibility to help the body mobilise its healing powers, to get the body to function normally again, by minimising obstruction and hindrances.

**In terms of detoxification, please tell your clients that:**

- Large proportion of medications/drugs are fat-soluble compounds – the liver has to make them water-soluble for excretion. Otherwise they will cross the epithelial tissues in the kidneys and get reabsorbed.
- Adverse reactions to caffeine and alcohol indicate poor liver detox function.
- Chemical sensitivity is another indication of poor liver detox function.
- Sugar & refined carbohydrates are damaging to the gut and liver.
- Adequate water is essential for flushing the kidneys and wastes.

**2. Finding the Stressors**

In **VARHOPE** look at:

- Resonance Frequency Pattern
- Voltage, Amperage, Resistance – consider implications
- Hydration, Oxygenation, Proten and Electron Pressure
- Cellular vitality
- Phase Angle
- Regularity Dysfunction in .....
- Explore Risk of .....

**The Main Test Matrix**

For **ACUTE items** (red and purple)

- If more than a whole screen – the body is very reactive, probably due to inflammatory and allergic processes
- Pick out items that you can relate to, having the health history of the client in your mind and some ideas of what the issues are.
- Use the Individual Reaction button to determine the significanc of any item, to assess the possibility/probability of “transitory/long-term (ongoing)”, “deficiency/excess”, “allergic or not” nature of a specific item.
- Zap any item which has a low rectification on the Individual Reaction panel, for 30 seconds till rectified.. In other words you can treat certain stressors to stimulate awareness and internal changes.

**Keep the discourse going with the client to get involvement and cooperation**

For **CHRONIC items** (bottom reactivities of < 40 and also in the blue):

1. If mainly empty – good sign
2. If not, why is the client not reacting? Has the client adapted? Correlate to:
  - a. client profile, looking at adapted/exhausted system/organ
  - b. the items in the high reactivity range and make a connection
3. Look for any items in the normal blue range, that you think may apply, by usingthe search facility and do an Individual Reaction to assess its significance.

Check stressors in **Subprogrammes/groups**:

- Are there significant number of reds and purples in each subprogramme/group? And does this fit in with the client profile?
- For example if significant numbers are in Fungus, Worms, Bacteria, Virus – this may imply pathogenic activities going on and you need to consider the terrain.
- If there are more significant numbers found in Flower Essences, Emotion, Imponderables, Oriental Herbs, then there are likely to be underlying emotional problems.

- Look for multiple **REPEATS** i.e. items that are repeated. For example the top 5 items in each subgroup – are there repetitions?
- Look for **PATTERNS** i.e. the relationship between various items and use your knowledge to think laterally. For example if a client comes with weight problem and thyroid and adrenals keep cropping up in the reds and purple, then the underlying stress is likely to be hormonal. If on the other hand emotional issues keep cropping up then you need to pursue the emotion behind the weight problem. This is not to say that each one has exclusivity since finally everything will trickle down to the molecular level.

At this juncture make a point of correlating the data you have gathered so far with what you have gathered verbally from the client to make sense of the bigger picture.

For example:

- A client has come with digestive problems and constipation.
- If there are repeating items relating to kidney, liver and blood - this may not only indicate organ dysfunction as indicated by the stresses, but also dysfunctional digestive system and deep toxicity due to poor elimination, which has stressed the organs of elimination i.e. liver, kidney as well as blood.

### Confirmation of what you have investigated

- Do a very quick **SCROLL of the Main Test Matrix** until you reach a reactivity value of 100 and note the items that may confirm your findings as well as repetitions. This will involve looking at hundreds of items depending on the value of the SOC index – but do this if you are experienced enough to do it rapidly. It's worth doing. You can identify stressors in different organs, systems, areas etc.

For example:

- If you find repetitive items on organs –these are hints to organ dysfunctions.
- If you find many nutrients – vitamins, minerals, fatty acids etc. – these are hints of nutrient deficiency.

### 3. Energetic Therapies for Maximum Stress Reduction

1. Do the auto therapies – fill in Holinguistic + Rife Generator + Scalar wave
2. Balance right and left brain in Time, Music Superlearning panel. The unconscious will communicate better when both sides of the brain are balanced energetically.

## FOR GENERAL BALANCING

Go to **Risks Profile – Therapy**

### 1. Do the two Auto therapies in **YELLOW** and **PURPLE**

#### REMEMBER, THERAPY CREATES INTERNAL AWARENESS

- In some people the autotherapies are adequate.
  - In stubborn/chronic cases deeper stress reduction may be needed. Use your discretion and choose the available array of therapies for the person.
2. **Harmonic Therapy in Timed Therapy, Music Superlearning** – balance right and left brain

Go to **Sarcode Timed Therapies** in **SPINAL**

- Click on Sluggish Liver Stimulation –
- 

Then go to **SHORT SARCODE** panel for quick treatments and rectification and use “Add Additional Therapy” to treat liver. Add:

- Antioxidants for Phase I – 9060 3994 7764 9046 198
- Amino acids, other nutrients, and botanicals for Phase II – 9027 87 3811 459 394 428 379 789 407

## DETOXIFICATION

### Specific Stress Reduction

1. Go to **Risks Profile – highlight Liver (or another organ) and click “Virtual Doctor Test”**
2. Click Connection to Homotoxicology and observe where it is most reactive and where the dot is – Humoral or Cellular phase. This will determine your therapy and what you do and piggyback.
  - “Excretion and Reaction” phases – the toxins are not deep
  - “Deposition and Impregnation” toxins have penetrated deeper
  - “Degeneration and Neoplasm” – toxins are at the cellular level
3. Put the dot on the phase that you want to detox or leave it where it is
4. Click on an organ/tissue
5. Click on Continue Test Nosode + .... And note “Nosode” and “Isode”
6. Click on Detox and fill in piggybacks accordingly. Examples below:
  - For “Excretion and Reaction” phases, clear top row and type in 6728 6696 6534 (double space) and treat for 1 minute and again if necessary till rectified.
  - “Deposition and Impregnation” phases clear top row and type in 6558 6539 6537 (double space) and treat for 1 minute and again if necessary till rectified.
  - “Degeneration and Neoplasm” phases clear top row and type in 6541 6542 3159 (double space) and treat for 1 minute and again if necessary till rectified.
7. Always work from inside out. The above homeopathics can be given orally.
8. See next page for piggyback suggestions and also discussion in class.

Close and return to Main Matrix.

Close Main Matrix panel – Click on “Check Current Rectification” and see whether “Toxicity” is on the RECTIFICATION RX panel. If it is cleared, then detoxification is finished for this session. There are, of course other therapies you can do in order to balance other imbalances. We shall go through these in class.

### Various Substances from the Matrix for piggybacking detoxification

| Organ              | Matrix Number   | Description (Homeopathics)   |
|--------------------|-----------------|--|
| <b>Liver (I)</b>   | 6728            | Nux-vomica for liver & gallbladder ailment   |
|                    | 6696            | ANTI-2 Enzymatic hypofunction of liver & pancreas (GUNA)   |
|                    | 6534            | DETOX N.9 ( Liver toxins (GUNA)  |
| <b>Liver (II)</b>  | 6558            | ENDOTOX N.15 Fat endotoxins (GUNA)   |
|                    | 6539            | DETOX N.14 General toxins (GUNA)   |
|                    | 6537            | DETOX N.12 Environmental toxins (GUNA)   |
| <b>Liver (III)</b> | 6541            | DETOX N.16 Regenerate with detox (GUNA)  |
|                    | 6542            | DETOX N.17 Stress toxins (GUNA)  |
|                    | 3158/9          | PAS HEPAR PASCN for stimulating liver  |
| <b>Liver</b>       |                 | <b>Homeopathics</b>  |
|                    | 4043            | NARAYANI OM 17 liver GB  |
|                    | 929             | DR combo remedy liver repair   |
|                    | 741             | NV Liver GB sarcode for cleansing rebuilding   |
|                    | 4115            | NARAYANI liver balance   |
|                    | 1061            | DR combo for degeneration  |
|                    | 1051            | Hepatic DR restores liver chi  |
|                    | 7029            | LX Liver detoxifies & flushes  |
|                    | 8665            | A-13DTX-LIVER stimulates detox   |
|                    | 717             | LIVER LIQUISCENCE NV   |
|                    | 790             | HEPA remedy liver detox  |
|                    | 4073            | NARAYANI 22 Liver  |
|                    | 9263            | LIVER cleanse  |
| <b>Liver</b>       |                 | <b>Nutrients, Herbs, Antioxidants</b>  |
|                    | 1151 792        | LIPOTROPIC FACTORS AAs & vitamins for liver function   |
|                    | 423             | L-Methionine (Amino Acid)  |
|                    | 796             | Phosphotatidylcholine – cholinergic stabilization  |
|                    | 459 394 428 379 | Taurine L-Cysteine L-Ornithine L-Arginine  |
|                    | 789 407         | L-Glutamine Glycine  |
|                    | 569 2539        | GLUTATHIONE  |
|                    | 1327            | GLUTATHIONE REDUCTASE  |
|                    | 9070            | Reduced Glutathione (Biocare)  |
|                    | 9060            | Natural Antioxidants   |
|                    | 7764 3811 3860  | Ellagic Acid Alpha Lipoic Acid (ALA)   |
|                    | 9027            | HEPAGUARD FORTE Liver support (choline, inositol, lipase milkthistle, biotin, methionine, alpha LA, green tea) |
|                    | 9046            | Resveratrol Plus (Biocare)   |
|                    | 114/198         | CURCUMA LONGA  |
|                    | 46              | BERBERIS VULGARIS  |
|                    | 9058            | Milkthistle Complex + tumeric, artichoke, black radish   |
|                    | 87              | CHELIDONIUM MAJUS  |
|                    | 3798            | Gentiana Algida Long Dan Cao stimulates liver & GB   |
|                    | 7291 4312 3721  | Nelson liver remedy Nelson liver tonic   |
|                    | 1282            | IRIS VERSICOLOR Remedy for liver detox   |
|                    | 4308            | Phyllantus Amarus Ayurvedic liver tonic  |
|                    | 790             | H.E.P.A Remedy for liver detox   |
|                    | 1429/2661       | CATALASE enzyme that regulates free radicals   |
|                    | 47              | B COMPLEX  |
|                    | 1250 4126       | SELENIUM   |
|                    | 2745            | MOLYBDENUM   |
|                    | 2746            | MANGANESE  |
|                    | 8946            | ZINC CITRATE (Biocare)   |
|                    | 17              | ALLIUM Garlic  |
|                    | 9041            | CELLGUARD FORTE antioxidants nutrients (Biocare)   |
| <b>Liver</b>       |                 | <b>FUTUREPLEX</b>  |
|                    | 8653            | A-1 CELLULAR RECHARGE predetox drainage cellular   |

|              |      |   |
|--------------|------|---|
|              |      | prepare   |
|              | 8654 | A-2 GENTLEDRAINAGE 1 <sup>st</sup> predetox step in drainage                |
|              | 8655 | A-3 ULTRA ANTITOX 1 <sup>st</sup> detox step prepare with A2 follow with A4 |
|              | 8656 | A-4 DEEP ANTITOX 2 <sup>nd</sup> detox gut prepare with A3 follow with A5   |
|              | 8657 | A-5 HEAVY ANTITOX don't use if metal in mouth                               |
|              | 8658 | A-6 REVITALIZATION rebuild  |
|              | 8659 | A-7 PROTOX start of detox   |
|              | 8660 | A-8 MALE BALANCE  |
|              | 8661 | A-9 FEMALE BALANCE  |
|              | 8662 | A-10 MAINTENANCE postdetox  |
|              | 8663 | A-11 ENVIROPROTECT  |
|              | 8664 | A-12 DTX-KIDNEY stim. Nat detox   |
|              | 8665 | A-13 DTX-LIVER stim. Nat detox  |
|              | 8666 | A-14 DTX-LYMPH stim. Nat detox  |
| <b>Liver</b> |      | <b>NEW VISTA and DR</b>   |
|              | 601  | ADDEX detox for food additives <b>907 DR &amp; 911 INSECTICIDES DR</b>      |
|              | 602  | ALGIN <b>913 RADIATION DR</b>   |
|              | 603  | AMALGAM <b>905 DR DENTAL</b>  |
|              | 604  | AMEBEX  |
|              | 605  | ASBESTOX <b>902 ASBESTOR (DR)</b>   |
|              | 606  | BAC <b>903 BACTERIAL IMM STIM (DR)</b>                                      |
|              | 607  | BEAUTOX <b>904 (DR)</b>   |
|              | 608  | CHEMEX <b>914 DR SYN CHEMICALS</b>  |
|              | 609  | CHLOROX <b>909 DR HALOGENS</b>  |
|              | 610  | ENVIROX <b>906 DR ENVIRON</b>   |
|              | 611  | FNG <b>908 DR FUNGI</b>   |
|              | 612  | INDUSTRIOX 910 INDUSTRIAL   |
|              | 613  | METAB   |
|              | 614  | METEX <b>912 DR METALS</b>  |
|              | 615  | OPSIN I desensitising allergic reactions                                    |
|              | 616  | OPSIN II desensitising allergic reactions                                   |
|              | 617  | VERMEX <b>915 &amp; 316 DR VERMI-FUGE</b>                                   |
|              |      |   |
|              |      | <b>NV SARCODES for tissue rebuilding</b>                                    |
|              | 735  | GALLBLADDER BEAR  |
|              | 738  | KIDNEY, OVARIAN, ADRENAL  |
|              | 741  | LIVER GALLBLADDER   |
|              | 742  | LYMPH, SPLEEN, MAMMARY  |
|              | 751  | SKIN & MUCOUS MEMBRANE  |
|              | 752  | SMALL & LARGE INTESTINE   |
|              |      |   |
|              |      | <b>DR sarcode remedy for tissue rebuilding</b>                              |
|              | 1024 | KIDNEY OVARIAN ADRENAL  |
|              | 1025 | KIDNEY PROSTATE ADRENAL   |
|              | 1026 | LIVER GALLBLADDER   |
|              | 1028 | LYMPH SPLEEN MAMMARY  |
|              | 1032 | PANCREAS STOMACH  |
|              | 1033 | PINEALPITUITARYHYPOTHALAMUS   |
|              | 1036 | SMALL/LARGE INTESTINE   |
|              | 1048 | DIGESTIVE STIMULATOR  |
|              | 1051 | HEPATIC restores liver chi  |
|              | 1059 | KIDNEY Oriental remedy  |
|              | 1060 | LARGE INTESTINE   |
|              | 1061 | LIVER for degenerative liver conds  |
|              | 1062 | LUNG  |
|              | 1063 | LYMPH   |

## **SUPPORT THERAPIES**

### **1. DISEASE DICTIONARY**

- Use Unconscious Choice and pick out what is appropriate
- Use ElectroAcupuncture and Bioresonance

### **2. SCIO Bodyviewer - to be accessed only after a certain amount of work has been done in the Consciousness programme, particularly Risks Profile.**

- The permutations and combinations for various treatments are endless.

### **3. SCIO – Irid**

- Click Unconscious Choice and Activate Piggyback as many times as you like
- Also pick any area on the menu bar and do one therapy

## **SUPPLEMENTS**

- 1. Keep supplements to a minimum and use as many natural supplements as possible. Avoid synthetic, manufactured vitamins, minerals and supplements which are isolates. Nutrients in nature do not come as isolates but in groups to work synergistically. Also avoid cheap supplements. All impose further burden on the liver. The following are natural:**
  - a. Enzymes**
  - b. Vitamins and minerals made from food sources or minerals and salts from the ocean.**
  - c. Probiotics and Prebiotics**
  - d. Glyconutrients**
  - e. Herbs**
  - f. Homeopathic remedies**
  - g. Flower essences**
  - h. Remedies duplicated on the SCIO**

### **Support Programme:**

- 1. Encourage the client to keep a diary of progress and to report back, even if by phone or email.**
- 2. If possible, encourage clients to research on the condition that they have, especially if the condition is a degenerative one. An informed client will be able to make informed choices.**
- 3. It goes without saying – advise them on diet and lifestyle, the cornerstones of health + the naturopathic principles.**
- 4. Inform them that natural healing takes time since the body must reverse itself from being unhealthy to being healthy. Offer them the opportunity of a package – say 5 to 10 sessions at a discount – to see how they progress.**

**Advise them to keep their medical doctor informed, especially if they are on prescribed medications.**

**A Practical Clinical Approach** (Courtesy of the Institute of Functional Medicine)

## **A Simple Patient Handout for Home Detoxification**

Practitioner: .....

Telephone: .....

Email: .....

### **Seven Day Detoxification Plan**

Please follow precisely all the instructions in this one-week home-based detoxification plan. It has been used with thousands of patients, many experiencing excellent results. This program of rest and renewal for your body can reduce aches and pains and symptoms of chronic disease; it can help you feel healthier and more energetic.

### **How Does It Work?**

The body has its own self-healing mechanisms. This seven-day program strengthens your body's healing forces in a short period of time. By stimulating your natural capacity to release and excrete toxins, you can remove some of the obstacles that are keeping you from being completely healthy. Detoxification is like an oil change for your car. It cleans and improves the filtering of your internal fluids in a way that prevents your body's engine from breaking down, and produces immediate benefits in fighting existing diseases. It is a simple program using a special diet, supplements, heat and contrast hydrotherapy.

### **Detoxification Program Summary**

- Two day water fast with bed rest if necessary
- Five days of rice fruit and vegetables
- Protein shakes 1-2 times/day daily during days 3–7
- Supplements are recommended
- Shower hydrotherapy treatment at least once a day
- Daily saunas. Don't do the sauna on the fasting days
- Sleep at least 6-7 hours a night
- Avoid "enervation" at night (TV, theatre, movies, parties)

### **Diet**

The program begins with a two-day water fast followed by 5 days of rice, fruit and vegetables. (Additional details on the fast and the diet are shown below). While on this diet, you should supplement these foods twice a day with a whey or rice protein-based powder. Add 2 rounded scoops in juice, blended, 2-3 times a day for breakfast and snacks to improve protein status during detoxification.

#### **Days 1 and 2**

Consume water, lemon water and herbal tea only. Be sure to drink a minimum of 8 glasses of these fluids per day. This fluid fast is extremely helpful in achieving optimal detoxification. Some people cannot tolerate this two-day fast, can't afford to lose any weight or are in a debilitated condition. These people should add the rice or whey protein and fruit juice 2 to 3 times per day to the other fluids.

#### **Days 3 to 7**

Following the water fast, a typical day's menu should reflect the general choices shown below. (You may need to eat more or less depending on your appetite.)

#### **Reintroduction of Omitted Foods**

Following your seven-day program, you should re-introduce foods back into your diet slowly – one food at a time, every 1 to 2 days. This process may take up to a month. Focus first on protein sources from lean meat, fish or eggs. Then add back beans and grains (other than wheat). Then introduce nuts. Finally, slowly reintroduce wheat, dairy and soy. Each time a food is reintroduced, note any reactions – physical, mental or emotional. Write them down and bring your notes to your next appointment.

### Typical Menu

|                    |  |
|--------------------|--|
| <b>Upon rising</b> | 8 ounces of hot lemon water  |
| <b>Breakfast</b>   | A protein shake made with fresh fruit and fruit juice; rice cakes; fresh fruit; herbal tea                 |
| <b>Snack</b>       | Fruit and/or a rice protein shake; herbal tea  |
| <b>Lunch</b>       | Salad and soup, or rice and steamed vegetables, or yam and steamed vegetables (hot or cold)                |
| <b>Snack</b>       | Fruit and/or a rice protein shake; rice crackers; herbal tea   |
| <b>Dinner</b>      | Rice and mixed vegetables (steamed or lightly sautéed), or soup and salad, or salad and baked sweet potato |
| <b>Note</b>        | Drink plenty of water and lemon water in these days as well.   |

### Foods to Use and Avoid

#### **Carbohydrate**

**Use** Brown rice, basmati rice, jasmine rice, wild rice, rice cakes/crackers, rice pasta & rice pancake mix. If variety is required, use quinoa, millet & amaranth grains.

**Avoid** Sugar, honey, molasses, jams, artificial sweeteners, corn, wheat spelt, kamut, barley and any products with these in them.

#### **Fats and Oils**

**Use** Extra virgin oil & unheated flaxseed oil

**Avoid** All other oils including butter & margarine

#### **Beverages**

**Use** Non-caffeinated herbal teas, purified lemon water (organic lemons only – squeeze ½ lemon into 1 litre water, drop lemon peel into water and drink; drink 1 litre daily), diluted fruit and vegetable juices (ideally fresh)

**Avoid** Coffee, black tea, all alcohol, soda pop caffeinated/decaffeinated teas/coffee

#### **Legumes**

**Use** Mung beans, red lentils

**Avoid** All other beans

#### **Vegetables & Fruits**

**Use** All varieties of fresh produce can be used. They can be steamed, baked, lightly sautéed, eaten raw or juiced. Vegetable can be used in any combination and quantity desired. Fruits are to be eaten one variety at a time and away from other foods.

#### **Condiments**

**Use** Vegetable salt, sea salt, apple cider/balsamic/rice vinegars, wheat free tamari, all spices

### General Categories of Foods

During your seven-day detox program, all of the following foods put too much burden on the liver's detoxification ability and often disrupt digestion. They must be avoided.

|                |                        |                                      |
|----------------|------------------------|--------------------------------------|
| Meat           | chocolate              | grains (other than those above)      |
| Fish           | nuts                   | preservatives & food colourings      |
| Poultry        | beans (other than mung | all packaged/processed/canned fruits |
| Eggs           | and listed soybean     |                                      |
| Dairy products | products)              |                                      |

### **Shower Hydrotherapy**

This home therapy enhances circulation, detoxification and metabolism. Ideally, it should be done everyday. Take a hot shower for 3 minutes then switch to cold shower for 30 seconds. Repeat the cycle 3 times, ending with a cold rinse. Make sure your entire body is showered this way. After you have finished three rounds, get out of the shower, dry off quickly, and go to bed or dress warmly till you refresh the body heat.

### **Sauna**

Sauna therapy is extremely safe, and is a critical step in removing fat-stored toxins through the skin. As you sweat, many toxins that are stored in the fat and blood (PCBs, cadmium, lead and industrial chemicals) are excreted through the skin. Do not sauna during the first two days of the program (the water fast)

#### **Sauna Method**

- Use a low temperature or infrared sauna, choosing a temperature from 150 to 170 degrees Fahrenheit. Drink 1 quart of warm water before entering and take water into the sauna with you, continuing to drink throughout the length of the sweat.
- Begin by staying in the sauna for 15 minutes, then come out for a cold water-rinse.
- Repeat this process for up to one hour. As you become more acclimated to the heat, you may increase your time a little each day until you reach two hours. The cold rinse is important because it stimulates circulation in the skin and removes waste material being excreted through it.

### **Dry Skin Brushing**

The skin regulates body temperature, functions as an organ of elimination and has been called the "third kidney". It averages 3100 square inches of surface area, acting as a protective shield to the outside world. Dry skin brushing is an old natural healing method used to increase blood and lymphatic circulation. It removes dead skin cells, keeps the skin soft, improves blood and skin circulation and helps the body rid of toxins.

#### **Skin Brushing Method**

- Brush your skin once a day with a natural-bristle dry skin brush that you can find at health food stores. Start with your arms, front and back, moving from the fingertips up into the armpit, always brushing towards the heart. Then do each leg, front and back, starting with the feet and brushing upward. Follow each leg up through the pelvis, buttocks, abdomen, and lower back. Then do the chest and upper back, always brushing toward the heart.
- If you wish you can lightly do the face and head, using downward strokes. Keep the brush dry (never get it wet). Just as you wouldn't use someone else's toothbrush, be sure that only you use your skin brush. If skin brushing is painful, do it lightly and persevere, the discomfort will pass. The chest, abdomen and inner thigh should be done lightly.

### **Supplements**

During this detox, the filtering mechanisms of the liver can become overloaded. Feelings of fatigue, headache, muscle pain and nausea are common as toxins are mobilized and excreted. Taking certain supplements is a necessary step to support the liver, promote better detoxification, and prevent symptoms as much as possible. Follow the supplements listed on your treatment program by your doctor. Supplements are prescribed according to your personal needs, but here are some general guidelines that will be followed.

1. The supplement program is for enhancing detoxification and improving circulation. It will be reviewed after 4 weeks.
2. The recommended supplements work by feeding the internal mechanisms of cells involved in detoxification. Work inside of the cells is driven by mini power plants called mitochondria. Toxins interfere with the energy production and this upsets the functioning of the entire cell.
3. The supplement program will not interfere with other supplements/medications that you are taking. All prescription medications are taken *under your doctor's order*.
4. You will not be asked to take any supplement that you do not absolutely need.

## LIVER & GALLBLADDER FLUSH – by Andreas Moritz

(Never cleanse when you are suffering from an acute illness, even just a cold)

1. Requires 6 days of preparation
2. followed by 16-18 hours of actual cleansing

To remove gallstones, you require the following items:

|  |   |
|--|---|
| Apple juice  | Six 1-litre (32 oz.) packets                            |
| Epsom salts or Magnesium sulfate                         | 4 tablespoons dissolved in three 8-oz. Glasses of water |
| Virgin olive oil cold pressed                            | One half glass (4 oz)                                   |
| Pink fresh grapefruit OR fresh lemon and orange combined | Enough to squeeze 2/3 glass of juice                    |
| 2 pint jars, one with a lid                              |   |

### PREPARATION

- **Drink 1 litre (32 oz) of packaged apple juice per day for a period of 6 days.** The *malic acid* in the apple juice softens the gallstones and make their passage along the bile duct smooth and easy. It also has a strong cleansing effect and the fermenting effect widens the bile ducts.
- Drink the juice slowly throughout the day in between meals in addition to your water intake. Don't drink it before meals or less than 2 hours after meals. Organic is best and clean your mouth after drinking.
- **Dietary recommendations:** During this week, avoid taking foods or beverages that are cold or chilled – they chill the liver and reduce the effectiveness of the cleanse. All foods and beverages should be warm or at room temperature. Also try to avoid foods from animal source, dairy products and fried foods and overeating – to help liver prepare for the flush. Otherwise eat normal meals.

- **The best times for cleansing:** The main and final part of the flush is best done over a weekend, when you are not under pressure and have enough time to rest – should preferably coincide with a day between full moon and new moon. The day of new moon is most conducive for cleansing and healing.
- **If you take any medications:** avoid any medication/supplement that are not absolutely necessary – gives the liver extra work.
- **Make sure that you cleanse you colon before and after you do a liver flush:** Colonic irrigation is best – ideally on the 6th day of preparation. Also make sure your bowel movemnt is regular.
- **What you need to do on the sixth day of drinking apple juice:** If you feel hungry in the morning, eat a light breakfast such as a hot cereal. Avoid sugars, eggs, nuts, pastries milk, butter, oils, yogurt, cheese, ham, cold cereals etc. For lunch eat plain cooked or steam vegetables with white rice (Basmati) and flavour it with a little unrefined sea salt. **Do not eat any protein foods, butter or oil** or you might feel ill during the cleanse. **Do not eat or drink anything (except water) after 2 pm**, otherwise you may not flush out any stones.
- **Follow the exact timing given below to receive maximum benefit from the liver flush.**

### *The Actual Flush*

#### Evening

##### **6 pm**

Add 4 tablespoons of Epsom Salt to 24 oz (3 8 oz. Glasses) of filtered water.

Drink 6 oz NOW (take a few sips of water to counteract bitter taste or add a little lemon juice, or drink it with a straw to bypass the bitter taste.) Brush teeth/rinse mouth with baking soda. Epsom salt dilates bile ducts making it easy for stones to pass as well as clears waste. (If epsom salt is unbearable use magnesium citrate at the same dosage)

##### **8 pm**

Drink the second 6 oz of Epsom salts.

##### **9.30 pm**

If you have not had a bowel movement until now, take a water enema, this will trigger series of bowel movements.

### **9.45 pm**

Thoroughly wash the grapefruits (or lemons and oranges). Squeeze them by hand and remove pulp.

Need  $\frac{3}{4}$  glass of juice +  $\frac{1}{2}$  glass olive oil into the pint jar and close the jar and shake the jar vigorously for 20 times till the solution is watery.

Ideally drink the solution at 10 pm, but if you need to visit the bathroom a few times, delay it for 10 minutes.

### **10 pm**

Stand next to your bed and drink the concoction – straight if possible or through a plastic straw. Do not take more than 5 minutes.

**LIFE DOWN STRAIGHT AWAY.** This is essential for helping to release gallstones. Turn off the lights and lie flat on your back with 1-2 pillows propping your head up. Head should be higher than abdomen. If uncomfortable lie on right side with knees pulled towards head.

**Lie perfectly still for at least 20 minutes and try not to speak.** Focus on your liver area.

You may feel the stones travelling along your bile duct like marbles. There won't be any spasms or pain because the magnesium in the Epsom salts keeps the bile duct valves wide open and relaxed, and the bile that is excreted along with stones keeps the bile ducts well lubricated. Go to sleep if you can.

If at any time during the night you feel the urge to have a bowel movement, do so. Check if there are any small gallstones (pea green or tan coloured ones) floating in the toilet. You may feel nausea in the night and/or in the early morning hours – due to a strong outpouring of gallstones and toxins from the liver and gallbladder, pushing the oil back into the stomach. The nausea will pass as the morning progresses.

### **The Following Morning**

#### **6 – 6.30 am**

Upon awakening (not before 6 am) drink 6 oz of Epsom salts (if you feel very thirsty drink a glass of warm water before this).

Rest, read, yoga or meditate. If you are very sleepy, you may go back to bed, although it's best if body stays in upright position.

#### **8 – 8.30 am**

Drink the 4th and last of 6 oz Epsom salts.

### **10 – 10.30 am**

Can drink freshly pressed fruit juice at this time.

One half hour later you may eat one or two pieces of fresh fruit.

One hour later you may eat regular but light food.

By the evening or the next morning you should be back to normal and feel the first signs of improvement.

Continue to eat light meals during the following days.

**Note:** Drink water whenever thirsty except right after drinking Epsom salts and for the first two hours after drinking the oil mixture.

### **What to Expect**

- During the morning and perhaps afternoon hours following the flush – a number of watery bowel movements – initially consisting of gallstones mixed with food residue and then just stones mixed with water.
- Most of the stones are pea green and float because they contain bile compounds. Can also be different shades of green or bright coloured and shiny like gemstones. Only bile from the liver can cause the green colour.
- Gallstones come in all sizes, colours and shapes. The light coloured ones are the newest, dark green ones are the oldest. Some are pea-sized or smaller and others are as big as one inch in diameter. There may be dozens and even hundreds of stones coming out at once..
- Watch out for tan-coloured and white stones which sink to the bottom – they are calcified gallstones released from the gallbladder and contain heavier toxic substances with only small amounts of cholesterol. All the green and yellowish stones are as soft as putty due to the action of apple juice.
- A layer of white or tan-coloured chaff or “foam” floating in the toilet may appear – consists of millions of tiny white, sharp-edged cholesterol crystals, which can rupture small biled ducts.They are equally important to release.
- Try to make estimates of how may stones you have eliminated.
- For bursitis, back pain, allergies or other health problems – best to remove **ALL** stones. And this may require 8-12 cleanses which can be performed at about three-week or monthly intervals. The 3 weeks in between may include the 6 day preparation for the next liver flush but ideally it should start after the 3 weeks have passed.

- The liver, as a whole, will function more efficiently soon after the first cleanse.
- BUT, within a few days, stones from the rear of the liver would have travelled "forward" towards the two main bile ducts (hepatic ducts) in the liver, which may cause some or all of the previous symptoms of discomfort to return. This simply means that there are more stones left to be removed.
- Take heart, because the liver's self-repair and cleansing responses will have increased significantly. Each flush will give a further boost to the liver and take care of any toxins or new stones that may have accumulated in the emanwhile.

### **Important**

The liver flush is one of the most invaluable and effective methods to regain your health. There are no risks involved if you follow all the directions to the letter.

Please check procedure in:

"The Amazing Liver and Gallbladder Flush" by Andreas Moritz