DEPRESSION AND OTHER NEUROTRANSMITTER RELATED CONDITIONS: THE MERCURY CONNECTION

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I. Introduction

According to Dr. Gerald Klerman, based on National Institute of Health studies there has been a huge increase (over 500 %) in the rate of depression and chronic neurological problems over the last 3 decades. A random sample of Oregon high school students found that over 16% had been diagnosed with depression (10). According to ECA samples, otherwise healthy people born in recent decades face a 10 fold increase in incidence of major depressive episodes compared to those sampled who were born in earlier decades. Over 6 million Americans over 65 suffer from major depression while another 5 million suffer from depressive symptoms (598).

Several factors appear to be contributing to this:

1. Neurological birth defects and developmental conditions due to increased levels of vaccinations, foetal exposure to alcohol, tobacco smoke, drugs, toxic metals such as lead, mercury and cadmium in addition to other neurotoxic chemicals such as pesticides and nitrates and other endocrine system/hormonal system disrupting chemicals such as dioxins. Studies by the National Academy of Sciences indicate that these affect close to 40% of all children in the U.S., more in some populations than others.

2. Changes in dietary habits resulting in nutrient, vitamin, and mineral deficiencies or imbalances and blood sugar imbalances (594), and increased consumption of inflammatory excitotoxins such as aspartame, MSG, and high fructose corn syrup.

3. Stress in family and workplace environments.

Groups of primary care patients aged 18-65 years from 333 randomly chosen public or private clinics throughout the whole country of Poland, totaling 7,289, coming for a regular visit were asked to participate in a study of the prevalence of depressive disorders (6). 71% of the sample was female. All patients filled in the Beck Depression Inventory (BDI). The prevalence of depressive disorders in the whole sample was 23.3%.

The number of people with anxiety disorders is close to the number with mood disorders (584). The primary types of anxiety disorders are phobias, panic attacks, generalised anxiety disorder (GAD), and obsessive-compulsive disorder (OCD). At least 20 million people are affected at some time by these conditions. Similar large numbers are affected by attention disorders, including attention deficit hyperactive disorder (ADHD), dyslexia, and schizophrenia (580, 584).

II. Causes Of Depression And Anxiety

There appears to be both a psychological/mind basis as well as physical/chemical basis for depression and anxiety. Nutritional deficiencies, environmental factors, methylation deficiencies, hormonal imbalances, and stress clearly can lead to depression and anxiety, but they also facilitate psychological factors (386, 580, etc.). Based on clinical experience, anxiety and hyperventilation and panic attacks appear to often be related to a person burying their feelings about their circumstances (583). Depression often occurs where a person has suppressed anger, anger turned inward. Dealing with nutritional deficiencies and environmental factors, along with being honest with yourself, acknowledging anger or feelings rather than assigning blame, and doing what makes you feel good usually leads to reduced depression or anxiety (583).

The levels of brain neurotransmitters such as dopamine, norepinephrine, and serotonin, appear to be major factors in controlling moods, and appear to be affected by lifestyle, diet, philosophy, and environmental factors. Some are more susceptible to depression than others, and thus more affected by diet and environmental factors (580).

Inflammatory processes and depression

Chronic or acute brain inflammation appears to be a primary factor in depression. The

brain is very sensitive to inflammation. Disturbances in metabolic networks: e.g., immuno-inflammatory processes, insulin-glucose homeostasis, adipokine synthesis and secretion, intra-cellular signaling cascades, and mitochondrial respiration have been shown to be major factors in depressive disorders and other chronic neurological conditions (592, 593, 598, etc.).

Inflammatory chemicals such as mercury, aluminum, and other toxic metals as well as other excitotoxins including MSG and aspartame cause high levels of free radicals, lipid peroxidation, inflammatory cytokines, and oxidative stress in the brain and cardiovascular systems (13, 596-599, etc.) Over-exposure to heavy metals such as lead and mercury have also been shown to induce anxiety or depression (386a).

Oxidative damage and depression

Studies have found that oxidative stress from reactive oxygen species (such as caused by mercury and toxic metals) causes increased insulin resistance, whereas reducing reactive oxygen species lowers insulin resistance (15). Insulin resistance has been found to be a significant factor in such conditions as metabolic syndrome, cognitive decline, cardiovascular disease, depression and cancer.

Nitric oxide related toxicity caused by peroxynitrite formed by the reaction of NO with superoxide anions, which results in nitration of tyrosine residues in neurofilaments and manganese Superoxide Dismustase (SOD) has been found to cause inhibition of the mitochondrial respiratory chain, inhibition of the glutamate transporter, and glutamate-induced neurotoxicity involved in ALS (521, 524).

Metal toxicity and depression

Mercury and cadmium inhibit magnesium and zinc levels as well as inhibiting glucose transfer. Reduced levels of magnesium and zinc are related to metabolic syndrome, insulin resistance, and brain inflammation and are protective against these conditions (43, 599). These are additional mechanisms by which mercury and toxic metals are factors in metabolic syndrome and insulin resistance and conditions such as diabetes and depression (15a, 43, 196, 338, 597).

As documented later, for those who have several amalgam fillings, replacement of the amalgam greatly lowers mercury and toxic metal exposure, lowers reactive oxygen species and related damage, and brings significant improvement in the health of people with conditions caused by oxidative damage and insulin resistance. It has also been

documented that supplementation with antioxidants such as green tea extract, bilberries, curcumin, N-acetyl-cysteine, etc. and supplements such as DHEA, Goat's Rue, cinnamon, quercetin, and vanadyl sulfate reduces inflammatory cytokine effects and lowers insulin resistance (15a).

Mercury and other toxic metals inhibit astrocyte function in the brain and CNS (119), causing increased glutamate and calcium related neurotoxicity (119, 333, 416, 496). Mercury and increased glutamate activate free radical forming processes like xanthine oxidase which produce oxygen radicals and oxidative neurological damage (13, 142).

These inflammatory processes damage cell structures including DNA, mitochondria, and cell membranes. They also activate microglia cells in the brain, which control brain inflammation and immunity. Once activated, the microglia secrete large amounts of neurotoxic substances such as glutamate, an excitotoxin, which adds to inflammation and stimulates the area of the brain associated with anxiety (598). Inflammation also disrupts brain neurotransmitters resulting in reduced levels of serotonin, dopamine, and norepinephrine. Some of the main causes of such disturbances that have been documented include vaccines, mercury, aluminum, other toxic metals, MSG and aspartame (593, 598, 600, etc.)

Thyroid function and depression

Hormone imbalance has been found to be a common factor in depression (488). Imbalances in DHEA and cortisol may underlie depression, particularly when stress and obesity are present, and thyroid imbalances have also been found to cause depression (386a). Oestrogen imbalances in post-menopausal women, low testosterone levels in some men, low DHEA levels, and hypothyroid conditions have been found to be common factors in depression. Subclinical hypothyroidism and/or the presence of thyroid peroxidase antibodies (TPOAb) has been found to be associated with sub-fertility, infertility, spontaneous abortion, placental abruption, preterm delivery, gestational hypertension, pre-eclampsia, postpartum thyroid dysfunction, depression (including postpartum depression), and impaired cognitive and psychomotor child development (7). It is recommended to suspect thyroid pathology if such conditions are present.

Most studies support a relationship between thyroid state and cognition, particularly slowed information processing speed, reduced efficiency in executive functions, and poor learning (11). Furthermore, hypothyroidism is associated with an increased

susceptibility to depression and reductions in health-related quality of life. Controlled studies suggest that cognitive and mood symptoms improve with thyroid treatment, though the data are limited by diverse treatment methodologies.

Functional neuro-imaging data provide support for the mood and cognitive findings and treatment reversibility for both overt and subclinical hypothyroidism (11a). 94 patients with subclinical hypothyroidism and a control group were evaluated to determine the prevalence of psychiatric disorders (11b). The prevalence of depressive symptoms based on Beck's Scale among subclinical hypothyroidism patients was about 2.3 times higher than among controls (45.6% v 20.9%, p = 0.006). Anxiety symptoms were also more frequent in the hypothyroid group.

Postpartum thyroiditis

Postpartum thyroiditis (PPT) is the occurrence, in the postpartum period, of transient hyperthyroidism and/or transient hypothyroidism, with most women returning to the euthyroid state by 1 year postpartum (8a). However PPT frequently reoccurs in subsequent pregnancies and approximately 25% of women with a history of PPT will develop permanent hypothyroidism in the ensuing 10 years. The mean prevalence of PPT in 2 studies was 7.5%. Postpartum thyroiditis is an autoimmune disorder, and thyroid antibody-positive women in the first trimester have a 33% to 50% chance of developing thyroiditis in the postpartum period. There was a 70% chance of developing recurrent PPT after a first attack, and a 25% risk even in women who were only anti-TPO positive without thyroid dysfunction during the first postpartum period (8b). For this group of women with PPT, 46% had postpartum depression in one or more pregnancies.

In a study of effects of hypothyroid or thyroiditis during pregnancy, infants of women with hypothyroxinaemia at 12 weeks' gestation had significantly lower scores on the Neonatal Behavioral Assessment Scale orientation index compared with normal subjects (9). Regression analysis showed that first-trimester maternal free thyroid hormone was a significant predictor of orientation scores. This study confirmed that maternal hypothyroxinaemia constitutes a serious risk factor for neuro-developmental difficulties that can be identified in neonates as young as 3 weeks of age

Because of such evidence, in November 2002, the American Association of Clinical Endocrinologists (AACE) recommended screening all women considering conception and/or all pregnant women in the first trimester for thyroid dysfunction (7b).

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pregnancies (8b).

As will be shown, there is considerable evidence that depression/neurological problems can be caused by many physiological problems related to past toxic exposures or combinations of these. Where physiological problems are contributing factors, determination of the underlying cause from assessing the person's past medical history, diet, blood tests, hair tests and so on can be useful to identifying and correcting any nutritional deficiencies or imbalances (386a) or identifying other problems to be dealt with. There is considerable evidence mercury exposure is among the most common significant exposures that commonly cause such effects, although many are also exposed to lead, arsenic, and pesticides that have similar effects and effects are synergistic or cumulative.

III. Mercury Exposure Levels From Amalgam And Other Sources

Amalgam fillings have been documented to leak significant levels of mercury continuously due to high vapour pressure of mercury and galvanic action between mixed metals in the mouth (600, 602). The average person with several fillings gets significant exposure of mercury daily, much more than from any other source and more than that prescribed by U.S. Government health guidelines (602).

Mercury in pregnant women is also documented to cross the placenta and accumulate in the foetus to levels higher than in the mother (603). Since mercury from amalgam fillings of a mother is also transmitted to nursing infants in significant amounts, mercury from their mom's dental fillings has been found to be the largest source of mercury to the foetus and a significant source of mercury in infants, which has produced developmental problems that affect children later in life (603).

Young children also have been receiving significant levels of mercury (thimerasol which is used as a preservative in vaccines) and large numbers have been found to be significantly adversely affected because of receiving larger numbers of vaccinations, especially at very early ages before the blood-brain barrier matures (602). People also get significant prenatal and postnatal exposures to other toxic metals such as lead, arsenic, cadmium and aluminum which have also been found to commonly cause significant neurological effects (604).

The top 3 toxic substances affecting large numbers of people in the U.S. adversely according to the US Environmental Protection Agency (EPA) and the Agency for Toxic

Substances and Disease Registry (ATSDR) are mercury, lead, and arsenic (600, 604).

IV. Toxic And Immune Reactive Effects Of Mercury

Mercury:

- Is neurotoxic (kills or damages brain and nerve cells) (19, 27, 34, 36, 39, 43, 69, 70, 147, 148, 175, 207, 211, 262, 273, 274, 291, 295, 301, 303, 327, 329, 395, 600)
- Generates high levels of reactive oxygen species (ROS) and oxidative stress and depletes glutathione and thiols causing increased neurotoxicity from interactions of ROS, glutamate, and dopamine (13, 56, 98, 102, 126, 145, 169, 170, 184, 213, 218, 219, 250, 257, 259, 286, 290, 291, 302, 324, 326, 329, 600)
- Kills or inhibits production of brain tubulin cells (66, 67, 161, 166, 207, 300)
- Inhibits production of neurotransmitters by inhibiting: calcium-dependent neurotransmitter release (372), dihydroteridine reductase (27, 122, 257), nitric oxide synthase (259), blocking neurotransmitter amino acids (438, 601), and effecting phenylalanine, tyrosine and tryptophan transport to neurons (34, 122, 126, 255, 257, 285, 288, 333, 438).
- Causes systemic methylation deficiencies (88), which are documented to commonly be a factor in chronic conditions such as depression and autism (386a).

Numerous studies have found long-term chronic low doses of mercury cause neurological, memory, behaviour, sleep, and mood problems (5, 72, 74, 107, 109, 290, etc.). Neurological problems are among the most common and serious effects of mercury, and include memory loss, moodiness, depression, anger and sudden bursts of anger or rage, self-effacement, suicidal thoughts and lack of strength or force to resolve doubts or resist obsessions or compulsions.

Many studies of patients with major neurological diseases have found evidence amalgam fillings may play a major role in development of conditions such as:

- Depression (94, 107, 109, 212, 222, 229, 233, 285c, 294, 317, 320, 322, 372, 374, 453)
- Schizophrenia (34, 35, 295, 601)

- Memory problems (70, 94, 212, 222, 600)
- Serious neurological diseases such as MS, ALS, Parkinson's and Alzheimer's diseases (13, 33, 66, 98, 207b, 330, 331, 424, 438, 483, 600).

Some factors that have been documented in depression are low serotonin levels, abnormal glucose tolerance (hypoglyacemia), and low folate levels (480-83), which mercury has also been found to be a cause of. Occupational exposure to mercury has been documented to cause depression and anxiety (534). Acute exposure to mercury vapour has been found to cause chronic depression, anxiety, and obsessive-compulsive behaviour (487).

One mechanism by which mercury has been found to be a factor in aggressiveness and violence is its documented inhibition of the brain transmitter acetylcholinesterase (175, 254, 451, 465). Low serotonin levels and/or hypoglycaemia have also been found in the majority of those with impulsive and violent behaviour (481,482).

Mercury (and other toxic metals) has been found to accumulate in the pineal gland and reduce melatonin levels and this is thought to be a significant factor in mercury's toxic effects (569). Melatonin has been shown to have a significant protective action against methyl mercury toxicity, likely from the antioxidative effect of melatonin on the MMC induced neurotoxicity (567). Disrupted sleep from low melatonin, or 'Seasonal Affective Disorder' with excessive melatonin production, can result in depression (386a).

There is also evidence that mercury affects neurotransmitter levels which have effects on conditions such as depression, mood disorders and ADHD. There is evidence that mercury can block the dopamine_b-hydroxylase (DBH) enzyme (571). This enzyme synthesises noradrenaline, and low noradrenaline can cause fatigue and depression. Mercury molecules can block all copper-catalysed dithiolane oxidases, such as coproporphyrin oxidase and DBH. Mercury and other toxic metals have been found to accumulate in the pineal gland and reduce melatonin levels and this is thought to be a significant factor in mercury's toxic effects (569).

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Workers occupationally exposed to mercury at levels within guidelines have been found

to have impairment of lytic activity of neutrophils and reduced ability of neutrophils to kill invaders such as candida (285, 404). The balance of yeasts found in the intestine can be a factor in neurological conditions such as depression (386a). Evidence suggests Candida albicans may activate depressive symptoms and fatigue by promoting ethanol production, a known central nervous system depressant.

Behaviour changes are also associated with Candida's inherent toxin – canditoxin – and/or by its tendency to compete with the host organism for essential dietary nutrients (460). Immune Th1 cells inhibit candida by cytokine related activation of macrophages and neutrophils. Development of Th2-type immune responses deactivate such defenses (285, 404b). Mercury inhibits macrophage and neutrophil defense against candida by its affects on Th1 and Th2 cytokine effects (181,285). Candida overgrowth results in production of the highly toxic canditoxin and ethanol which are known to cause fatigue, toxicity, and depressive symptoms (460).

Mercury causes decreased lithium levels, which is a factor in neurological diseases such as depression and Alzheimer's. Lithium protects brain cells against excess glutamate and calcium, and low levels cause abnormal brain cell balance and neurological disturbances (33, 56, 280, 294, 333). Medical texts on neurology (27, 295) point out that chronic mercurialism is often not recognised by diagnosticians and misdiagnosed as dementia or neurosis or functional psychosis or just "nerves". "Early manifestations are likely to be subtle and diagnosis difficult: Insomnia, nervousness, mild tremor, impaired judgment and coordination, decreased mental efficiency, emotional lability, headache, fatigue, loss of sexual drive and depression are often mistakenly ascribed to psychogenic causes". Very high levels of mercury are found in brain memory areas such as the cerebral cortex and hippocampus of patients with diseases with memory related symptoms (34, 158, 207, etc.)

A direct mechanism involving mercury's inhibition of cellular enzymatic processes by binding with the hydroxyl radical (SH) in amino acids appears to be a major part of the connection to neurological conditions such as autism, schizophrenia, manic-depressive, ADD, depression (294, 375, 408, 438, 601).

For example mercury has been found to strongly inhibit the activity of dipeptyl peptidase (DPP IV) which is required in the digestion of the milk protein casein (411, 412, 602). Studies involving a large sample of schizophrenic or autistic patients found that over 90 % of those tested had high levels of the milk protein beta-casomorphin-7 in

their blood and urine and defective enzymatic processes for digesting milk protein (410). Similar findings have been confirmed for ADD and mania patients. Elimination of milk products from the diet has been found to improve these conditions in large numbers of patients (5). Such populations have also been found to have high levels of mercury and to recover after mercury detoxification (60, 313, 413, 600). As mercury levels are reduced the protein binding is reduced and improvement in the enzymatic process occurs (5).

Additional cellular level enzymatic effects of mercury's binding with proteins include blockage of sulphur oxidation processes and neurotransmitter amino acids (5, 33, 114, 438), enzymatic processes involving vitamins B6 and B12 (5, 418), effects on the cytochrome-C energy processes (35, 232), along with mercury's adverse effects on cellular mineral levels of calcium, magnesium, zinc, chromium, and lithium (38, 43, 96, 198, 333, 386, 427, 432, 484).

Studies have shown a significant association between hypothyroidism and mood disorders such as depression (8, 391). Mercury from dental amalgam has been documented to cause hypothyroidism (35ab, 50, 91, 212, 222, 369, 382, 390). The majority of patients tested with hypothyroidism or thyroiditis and treated with dental amalgam replacement significantly improved after replacement (91, 369).

Numerous studies have found long term chronic low doses of mercury cause neurological, memory, behaviour, sleep, and mood problems (34, 69, 70, 71, 72, 74, 95, 107, 108, 109, 115, 119, 140, 141, 196, 199, 222, 252, 255, 257, 258, 282, 290]. Neurological effects have been documented at very low levels of exposure (urine Hg< 4 mcg/l), levels commonly received by those with amalgam fillings (290). One of the studies at a German University (199) assessed 20,000 people.

There is also evidence that foetal or infant exposure causes delayed neurotoxicity evidenced in serious effect at middle age (255). Studies of groups of patients with amalgam fillings found significantly more neurological, memory, mood, and behavioral problems than the control groups (34, 107, 108, 109, 140, 141, 196, 199, 222, 290).

Increased mercury levels from amalgam are documented to cause increased neurological problems related to lowered levels of neurotransmitters dopamine, serotonin, noradrenaline and acetylcholinesterase (35, 107, 140, 141, 175, 251, 254, 288, 290, 296, 305, 372, 412, 451, 465). The reduced neurotransmitter levels in those

with amalgam appear to be a factor encouraging smoking since nicotine increases these neurotransmitter levels and a much higher percentage of those with amalgam smoke than in those without amalgam (141).

Based on thousands of clinically followed cases by doctors, replacement of amalgam fillings resulted in the cure or significant improvement in the majority of cases for:

- Depression (35, 94, 95, 107, 212, 222, 229, 230, 233, 271, 294, 317, 320, 322, 376, 407)
- Schizophrenia (34, 35, 294)
- Insomnia (94, 95, 212, 222, 271, 317, 322, 376, 407)
- Anger (102, 212, 233, 320, 407)
- Anxiety & mental confusion (57, 94, 95, 212, 222, 229, 233, 271, 317, 320, 322, 407) memory disorders (94, 95, 222, 407).

For example, in a study of amalgam replacement for 56 persons who suffered from chronic depression, 16 had the condition eliminated and 34 had significant improvement after a year or 4 years (95).

One of the most common causes of depression and mood disorders has been documented to be past toxic exposures such as mercury or pesticides, and the majority treated for these at clinics that deal with such conditions have either recovered or shown significant improvement (552, 600, 601). Amalgam dental fillings have been found the most common source of such toxic exposures, with mercury thimerosal from vaccinations also affecting millions of children (600, 601).

Many doctors treating depression and mood disorder conditions related to toxic exposures also usually recommend supplementing the deficient essential minerals that mercury affects by affecting cell membrane permeability and blocking cellular enzymatic processes, often obtaining a hair element test to determine imbalances and needs (560, 600). The body requires adequate, but not excessive, amounts of trace minerals and nutrients for proper functioning. Under certain conditions, excesses or deficiencies of many of these elements can set off symptoms of depression (560).

Subnormal levels of zinc, for example, are associated with treatment-resistant depression (561). Whereas deficiencies of magnesium can provoke a wide range of

psychiatric symptoms related to depression, ranging from apathy to psychosis (562). Research on manic patients, on the other hand, has revealed elevated vanadium in the hair – significantly higher levels than those measured in both a control group and a group of recovered manic patients (563).

V. The Danger Of Vaccinations

Chronic over-activation of the immune system has been found to be a major factor in neurological and cardiovascular conditions (593, 598, etc.). Immune adjuvants in vaccines including aluminum, mercury, special lipids, and even MSG in some cause activation of the immune system which can last for months. This causes inflammation of the brain that is magnified by each additional vaccination with more immune adjuvants.

The high number of vaccinations in a short period of time has been found to be a major cause of autism spectrum and other inflammatory conditions in children, and also to be major factors in inflammatory conditions of older adults such as depression, Alzheimer's and Parkinson's disease (593, 598, 600, 601, etc.). Flu vaccinations in those over 55 years of age have been found to increase the risk of Alzheimer's by over 500%, along with increased risk of major depression (598).

VI. Treatment Of Depression

Anyone with depression should be examined and tested for toxic metal exposure or exposures to other toxics. Detoxification should be carried out as appropriate. Those with several amalgam fillings or metal crowns over amalgam are getting high exposures of extremely toxic substances that are highly inflammatory so should have the problematic dental work replaced. Everyone should also be checked for problematic root-canal filled teeth and jawbone cavitations, which likewise are highly inflammatory and can have major impacts on the immune system and health (605). Reducing glutamate levels and blocking glutamate receptors can significantly improve depression (598).

Lifestyle and diet

Diet and lifestyle are important factors in preventing or controlling depression. One should avoid alcohol, sugar, caffeine, and inflammatory substances such as MSG and high-fructose corn syrup (580,598). Reduce stress and get regular exercise. Yoga and meditation have been found to be helpful for many.

Supplementation

B Vitamins and magnesium deficiencies have been found to be factors in depression and anxiety. Supplementation to assure proper levels is beneficial in treatment (583). SAMe (400-1600 mg) and Inositol have been found to be effective in treating depression and anxiety with effectiveness at least as much as pharmaceutical antidepressants and much less adverse effects (580, 590). Inositol has been found to be effective for treating OCD, panic disorders, and bipolar depression (591), with effectiveness at least as much as SSRIs and less adverse effects(591).

St. Johns Wort (300 mg x 3) also has been found effective for many (580). Other nutrients found to cause depression when low or to usually be low in depression or to be effective additions in treating depression include omega-3 fatty acids (EPA/DHA), ginkgo biloba, DHEA, natural progesterone, pregnenolone, DMAE, L-Carnitine, NADH, Phenylalanine, Folic Acid, Vit B12 (cobalamine), B6, other B vitamins, choline, vitamin D, vitamin C, potassium and testosterone in men over 40 (580, 582). A product that contains several of these nutrients is Happiness 1-2-3 (vit B complex, magnesium, St. Johns Wort, L-Theanine, 5-HTP, magnolia) (583). Other companies referenced here have similar combinations (580, 582).

Lower levels of fish oil (EPA) have been found to be significantly related to depression. Elderly people have been found to be of special risk regarding depression. Studies have found higher levels of EPA to be associated with lower likelihood of depression or dementia (580b) in the elderly. Theoflavins from black or green tea and curcumin (turmeric) have also been found to be significantly effective against inflammation, which is a major factor in depression (580). Poor digestion results in poor mineral and nutrient absorption and is a factor in many chronic conditions. Digestive problems often increase with aging, due to reductions in digestive enzyme production and availability as well as increased proliferation of pathogenic organisms. Supplementation with digestive enzymes and probiotics often significantly improves digestion and improves digestive related conditions (580).

Anxiety Disorders

Anxiety Disorders include Panic Disorder, OCD, PTSD, Phobias and General Anxiety Disorder (584). As previously noted, anxiety or panic disorder can be related to not acknowledging or to burying feelings (583). Panic disorder is characterised by repeated

episodes of intense fear and affects 3 to 6 million people in the US. Obsessive-Compulsive Disorder (OCD) is characterised by anxious thoughts and uncontrollable ritualistic behavior and affects 2% of the population. Some studies have suggested OCD patients usually have high glutamate levels, which overexcites areas of the brain (581). Post-Traumatic Stress Disorder (PTSD) is a debilitating illness resulting from a traumatic event or events. It affects a large number of people. Phobias are irrational fears of things or situations and affect over 10% of the population.

Generalized Anxiety Disorder (GAD) is chronic, daily worrying about health, finances, work and family. Stress is a psychological and physical response to the demands of daily life that exceed the person's ability to cope successfully. Stress can have physical effects and prolonged stress can have debilitating effects. Two conventional non-pharmaceutical treatments for anxiety are behavioural therapy (breathing techniques, exposure therapy, etc.) and cognitive therapy (modification of thinking patterns).

As previously noted, environmental toxins can be a factor in causing nutritional deficiencies, imbalances, and inflammation related to anxiety disorders and reductions in exposures have been found to be beneficial. Hypoglycaemia may be a factor in some anxiety disorders so it is advisable to eat more frequent, small quantities including protein and nuts. Many are adversely affected by stimulants such as caffeine. Irregular or insufficient sleep patterns can be a significant factor. Regular exercise is generally beneficial in anxiety disorders. Massage therapy, including aromatherapy is often helpful, along with meditation and deep breathing exercises. Music, yoga, muscle relaxation techniques and biofeedback are also often helpful.

Deficiencies of B vitamins and magnesium have been found to be common factors in anxiety disorders (583). Adapton (fish oil) is commonly used helpful treatment for anxiety in Europe (580). Very successful for fatigue, etc. Theanine (green tea extract) is calming and lowers blood pressure (580, 582, 583). Ginseng has been found to be particularly effective for many post-menopausal women's anxiety, fatigue and depression. Reishi has helped some and Ashwaganda (Indian Ginseng) (580). A product with several of these nutrients is Calming Balance (vitamin B complex, magnesium, L-Theanine, Magnolia extract) (583). The other sources referenced here have similar products (580, 582).

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