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Fatigue is an overall feeling of tiredness and lack of energy, o en associated with having poor motivation, a ected thought process, sore muscles and mood changes. It is a lingering tiredness, unexplained, persistent, that a ects daily activities, productive work and relationships.

And this is the time for you to learn about it. e factors we here describe interact and combine to cause fatigue. Intense or light, with or without body aches or brain fog, with or without GI problems, fatigue has di erent forms.

W a fa g e?

Fatigue is more than just feeling tired. It is a state of mental and/ or physical exhaustion that reduces a person's ability to perform work safely and e ectively. It may also manifest itself unrelated to work, like a lack of interest for activities and even for entertainment. It might be associated with feeling tired even a er sleep, mood disorders, short term memory problems, lack of enjoyment, inability to concentrate and a constant need for rest. ose a ected may feel overwhelmed, withdrawn and emotionally and mentally drained.

Symptoms vary from person to person and might also include lack of motivation, irritability, weight gain secondary to stress eating or weight loss secondary to loss of appetite. Insomnia and mental exhaustion can be present as well. If le unchecked, it can lead to all sorts of serious health problems, including anxiety, depression, burnout, and even hit you with mental exhaustion.

W a ca e fa g e?

e rst step in addressing fatigue is making sure it is not due to a medical condition.

Med ca c d a c a ed fa g e, ac f e e g a d fee g ed a e:

Anemia, hypothyroidism, cancer, metabolic disorders, diabetes, cardiovascular disease, heart disease, lung disease, low sodium, low potassium, low magnesium, low B-12, liver disease, kidney disorder, side e ects of medications (like blood pressure medication, cholesterol medication, pain killers, allergy medication, etc.), grief, nutritional de ciency, drug abuse, alcoholism, leukemia, poor sleep, tumors, cancer, side e ect of over the counter medications and exercise supplements, poor adrenal function, hormonal decline, amino acid de cit, infection, depression, etc. ey all need to be ruled out by a competent physician with proper tests and lab work. Don't postpone this. Once this is done, you can then focus on this publication and understand how the factors we mention here (NT, hormones, toxins, brain-hypothalamus-pituitary-adrenal axis disorder, etc) can combine to make your life di cult and make you feel tired all the time.

O ce e ed ca c d a e ed , d c de e f g e g fac :

N e De c

Lack of good proteins, amino acids, vitamins and minerals are quite frequent in our country. ese generate nutritional de cits o en a ecting important metabolic pathways and brain chemicals production. ese brain chemicals are known as neurotransmitters (NT), they control all our mental functions and they are strongly dependent on the food we eat, digest and absorb. Certain eating habits, fad diets and wrong dietary approach can generate important nutritional de ciencies that may end up causing NT decline. Mothers feeding their children arti cial food should take this in account.

A quick walk through supermarket isles can reveal multiple factory-made foods commonly consumed which may not provide de quality nutrients our brain needs. Arti cial (man-made) diet can end up depleting brain and body of essential nutrients, (like vitamin B-12, vitamin B-6, amino acids, omega fat, magnesium, iodine, etc). Teenagers and young adults, so much a ected by the stress to succeed and who disregard proper nutrition and consume large quantity of arti cial (factory-made) foods can be particularly susceptible.

D e g d ed ca a e a a d f e

cognition and intellectual outcomes. Hence, we use and recommend our Florida Mediterranean Diet (we can mail or e-mail you a copy). Without any doubt, dietary improvement, away from the Standard American Diet (SAD) should be the rst step. We regularly combine this diet with our gut healing protocol. Quite o en we provide a nutrition protocol based on the food sensitive test and nutrigenmics guidelines, disengaging the person from the SAD. An initial 2-3 weeks of Detoxi cation diet combined with high quality multivitamins o ers a bene cial rst step approach.

Most of the times we manage this by adapting the Florida Mediterranean Diet according to the Food Sensitivity Test and the genetic background of the person. An initial 2-3 weeks of Vital-Detox program o ers a bene cial rst step approach.

Example: I follow this dietary plan but I don't consume dairy, lobster, shrimps, sushi, apples, cereal, oatmeal, cream-cheese or turkey, and once a month I do a 'Vital-Detox Program' week, which includes the Vital-Detox detoxi cation protocol.

But Wait, We Were Addressing Fatigue, what are those neurotransmitters (brain chemicals) have to do with it?

Our brain controls every single function of our body, including walking, typing, digestion, mood, liver and kidney function, heart and lungs, hormones, body temperature, blood pressure, glands, muscles, immune system, etc. All these functions are achieved through communications between the billions of brain cells that constitute our brain. ose brain cells pass chemical-electrical information to one another through the passage of brain chemicals known as NEUROTRANSMITTERS (NT).

ere is a strong relationship between NT and fatigue.

ese NT are chemicals that enable transmission between brain cells (neurons) and between brain cells and organs, muscles and glands. ese communications are vital and it is through these very essential neurotransmitters that proper brain function is achieved. In the brain, NT are involved in managing memory, intellect, problems solving, mood, sex drive, hunger, thirst, satiety, anger, thought process, concentration, sleep, communication, speech, reading, understanding, sensations, behavior, and many more functions. When NT decline or are in imbalance, ANY brain function can be a ected. Production and utilization of energy is controlled by NT.

ere are over a hundred di erent brain chemicals encompassing multiple functions. Of those, serotonin, dopamine, epinephrine and norepinephrine are our main concern because they are the four main NT and because of their implications in multiple medical disorders. When you take in account how much mood and psychological

SAMe is smart, but they are misinformed and they are just tilting the metabolism in the wrong direction and may end up depleting vital neurotransmitters. Some others pride themselves from getting the expensive IV glutathione, but they are just unknowingly pushing themselves to dopamine decline with all its adverse consequences. Some people take those energy drinks containing guarana, 5-HTP and ca eine, which other than temporary excitation bring the individual closer to detox failure and NT decline. e eagerness for stimulation combined with lack of information makes the picture worse. Guiding yourself by the advice of a 'beautiful website' or by the cheap 'recommendation' of a vitamin shop salesman will not make things any easier.

Make no mistake. Taking just 5-HTP or L-Triptophan or tyrosine may deplete the glutathione-detox system and may push the person deeper into the above conditions. is is essential because the glutathione-detox system (also described as the cysteine-glutathione pathway) keeps the cellular methilation-factory working well. (We'll talk about methylation later on).

A bit of a warning: A lot of products are sold in the internet and health food stores containing 'energy' pills or drinks containing tyrosine, taurine, tryptophan, alpha lipoic, ca eine, special vitamins, and promising better energy, clearer mind, metabolic enhancement, exercise improvement, pre-workout bene ts, etc. . However, the recurrent use sacri ces vital metabolic pathways and might replete both NT and the precious glutathione.

Hey, why such a fuzz about glutathione? Because, again, it is the cellular cleaner, removing toxins and free radicals that otherwise would clog the cells with waste and impair their functions. Research has shown that almost all chronic conditions are characterized by glutathione de ciency, like the ones we mention above but also asthma, cancers, cataracts, macular degeneration, glaucoma (open angle only), chronic fatigue syndrome, degenerative diseases, diabetes, autoimmune disorders, all diseases of liver, kidneys, lungs, heart, and digestive system, bromyalgia, peripheral neuropathy, metabolic disorders, multiple sclerosis, Parkinson's, skin disorders, seizures, tumors, autism, as well as low immunity, cell mutations and poor healing a er burns, physical trauma and surgery. is glutathione system, then, is essential for good health AND for prevention of multiple diseases. e combination of NT and glutathione decline is a threat to good health.

Quite o en NT imbalance, fatigue, weight gain and hormone decline occur at same time. You don't rescue those individuals with some cheap vitamins and chicken soup nor with a one week vacation or psychotherapy. Nor with pharmaceuticals, alcohol or marihuana. You rescue them with a combined therapy of NT-precursors. Did I mention marihuana?

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the people with fatigue or addiction, all the psychiatric disorders, all the people with depression or anxiety, and all so many with cancer ?. Millions! Now you are learning why. is paper has to do a lot with the answer to this 'why'.

T

Toxins and chemicals of all kinds have been persistent and common environmental contaminants over the last several decades, and continue to be a permanent threat to human health. ey come from multiple sources and invade our body regularly. ey include chemicals, pesticides, plastic particles, petrochemicals, colorants, herbicides, fertilizers, some food additives, metal particles (known as heavy metal particles), chemical discharges from industrial plants, multiple air pollutants, water contaminants, colorants in drinks and snacks, etc. It is a common knowledge that 80-90% of most chronic health conditions are triggered by toxins.

From Florida to Alaska and from New York to California the water supply and the water in rivers and lakes are contaminated with chemicals of all kinds, and supermarkets carry vegetables and fruits contaminated with herbicides, pesticides and toxic fertilizers and foods prepared with chemical additives, colorants and even petrochemicals. Toxins are so widespread that you can nd them even in breast milk and in the umbilical cord blood of newborns. Check the "Toxin" article in our website (www.JupiterInstitute.com).

To certain degree, our body's own detoxi cation system is capable of eliminating those incoming toxic attacks. is glutathione-detoxi cation system is natural to us, and has been always there, helping us survive, even when there weren't antibiotics or doctors around. But things changed. For many centuries the agents attacking our body were natural, simpler and not coming in such large numbers.

S e

Stress is a known cause of NT imbalance and decline. Emotional events and stress have an adverse reaction over the NT and on our capacity to detoxify. Fear, anger, grief, work related stress, driving stress, nancial and family stress, divorce and recurrent state of anxiety produces this e ect. Working as a truck driver, policeman, nurse, doctor, soldier and paramedic are just few examples of high stress occupation. Housewife stress, nancial problems and work related stress are quite common. Any of these events or occupations, carried for prolonged time, can and will interfere with NT balance and our liver detoxi cation process, allowing toxins to accumulate. It is a fact, prolonged periods of stress can deplete neurotransmitters levels. Our fast paced, fast food society greatly contributes to these imbalances. Moreover, the sensory overload that occurs from our brain being bombarded by sounds, electronic games, cell phone overuse, rapid visual e ects from televisión and movies, noise, arti cial light, etc., does have an adverse e ect on our NT. Management requires a very speci c type of adaptogens (never from websites or internet) and guidance regarding stress management.

G E ec

When our gastrointestinal system is not not working properly then either the digestion, the absorption or the elimination work right and all kind of complications occur. e combination of arti cial (man-made) foods, excess of carbohydrates, processed carbohydrates, stress, food chemicals, yeast, food sensitivity reactions, enzyme de cit, abnormal bacteria and the use of anti-acids and stomach-acid blockers causes poor digestion of foods. e lack of proper digestion causes poor absorption of nutrients and allows the food in our intestines to go through abnormal fermentation and putrefaction with consequent productions of toxins inside the intestine. is process allows abnormal bacteria and yeast to overgrow (a process called Dysbiosis) which in turn produces local toxins, which then leak through the wall of the intestine and can spread through organs and brain. (Read the articles in our website, especially the ones titled 'mental health', food sensitivities', 'stress' and 'hormones and fatigue').

e association between food, gut and mental health is a reality. As wrong foods and food sensitivities cause dysbiosis, gut ora abnormalities and bacterial overgrowth, bad things occur. e altered gut ora can impact human brain in numerous ways:

1) Bacterial components, such as LPS, may produce nervous system in ammation

2) Bacterial proteins may stimulate dysfunctional responses of the brain

3) Bacterial enzymes may produce neurotoxic metabolites

4) Gut microbes can produce hormones and neurotransmitters that are identical to those produced by humans, causing metabolic adversities

5) Gut bacteria may cause all kind of metabolic alterations and neurotoxicity.

rough these varied mechanisms, gut microbes shape the architecture of sleep and stress reactivity of the hypothalamic-pituitary-adrenal axis. ey in uence memory, mood, and cognition and may be involved in a range of disorders, including alcoholism, chronic fatigue, bromyalgia, restless legs syndrome, etc.

Since diet has a signi cant impact on composition and function of the human gut ora, change in dietary patterns should be considered when attempting to relieve the impact of gut microbes on the brain.

Citation: Nuchovich D

e HPA axis (Hypothalamus-Pituitary-Adrenal) is a ected and the adrenal gland secretion of cortisol and adrenaline is impaired as well, with resulting decline in the production and utilization of energy. Neurotransmitters like dopamine, substance-P, serotonin and norepinephrine are all involved, and their decline is a key player in the development of fatigue. e e ect of consequent hormonal decline and the failure of the glutathione-detox system ad up to the complexity of this condition.

Management is not easy, as brain chemicals are not well understood by the common population who wants a fast and successful relief for their fatigue. ere is no instant solution here. In addition, most people want to continue their routine without accepting that a change is needed. at may not be possible either. Management requires reviewing this publication and understanding it, then evaluating which factors are a ecting you, then treating appropriately the relative nutrient decline, xing the gut, managing hormones and thyroid, working on the stress factors, adjusting the diet, etc. . e person might be a ected by several of the eight factors I describe which need to be evaluated and manage. We address this panorama of disorders step by step, doing the necessary testing, evaluating and supplying sex hormones, managing supplements and nutrition, providing NT-precursors, counseling on detoxi cation, working on possible stress factors, healing the gut, etc.