Journal of
Medical Research and Surgery

Review Article

Cocores JA., J Med Res Surg 2023, 4:2

The Glutamate Dependence Hypothesis May Explain Overeating Browned Food Only and the Worldwide Heart Disease Pandemic

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Received date: April 08, 2023; **Accepted date:** April 23, 2023; **Published date:** April 30, 2023

Citation: Cocores JA. The Glutamate Dependence Hypothesis May Explain Overeating Browned Food Only and the Worldwide Heart Disease Pandemic. *J Med Res Surg.* 2023;4(2):36-42. doi: 10.52916/jmrs234105

ABSTRACT

The following study tried to determine whether Maillard reaction end product-embodied food is significantly more alluring, rewarding, addictive, and cardiovascular taxing than Maillard reaction end product-free meals. As importantly, does Maillard end product-containing fare exhibit more tolerance measured by increased total calorie consumption per day, progression measured by rising amounts of overweight, and withdrawal measured by more frequent urges to snack and dine than Maillard reaction end product-free provisions?

The data presented here suggests an intimate association between dietary Maillard-reaction end product-induced glutamate dependence, overeating browned food only, and cardiovascular disease. Phosphorous and glutamate-prompted redox imbalance, hyperlipidemia, immune system activation, chronic inflammatory disease, vascular calcification, hypertension, ischemic heart disease, atrial fibrillation, and stroke may be symptoms of Glutamate dependence.

Keywords:

Glutamate dependence, Glutamate addiction, Food addiction, Phosphorus, Phosphates, Stimulant addiction, Phosphorus/magnesium balanced cuisine, Therapeutic cuisine, Culinary therapeutics, Magnesium, Gamma-Aminobutyric Acid (GABA), Glutamine, dopamine, Opiates, Casomorphin, Anandamide, Maillard reaction end products, Ammonia Masked Oxidative Stress (AMOS), Reductive stress, Oxidative stress, Redox imbalance, Immune system activation, Chronic inflammatory disease, Phosphorus-prompted vascular calcification, Hyperlipidemia, Hypertension, Atrial fibrillation and stroke, Ischemic heart disease

Introduction

Peer-reviewed articles claiming the blood-brain barrier successfully restricts the movement of glutamate [1] may have diverted attention away from a novel method of reducing the ever-growing prevalence of the leading cause of morbidity and mortality globally, heart disease.

Glutamate instantly exerts its powerful neuroexcitatory and stimulant effect via oral-mesolimbic receptors, inaccurately conceptualized as umami taste buds [2]. And other non-blood-brain barrier-governed pathways, routes, and passages leading to the brain's reward and pleasure center indicate a parade of the glutamate-central nervous system effects can be observed [3].

The Glutamate Dependence Hypothesis (GDH) is made manifest by briefly reviewing its primary coexisting pieces, one-in-essence.

The Glutamate Dependence Hypothesis Part I

Maillard-Reaction End-Product-Free (ME-free) cooking and processing includes raw, steamed, salted-water fondue, boiled, normal pressure stewed, and first pressed olive oil in tinted glass. ME-free food decreases phosphorus values by as much as 43% for vegetables and 49% for meat [4].

Higher temperature heated, browned, or Maillard-reaction end-product-embodied (ME-containing) [5] cuisine and preparation includes off-the-shelf raw or reheated vegetable oil, previously heated-dry grains, beans, nuts, seeds, flour, sugar, sweetener, spices, seasoning, herbs, meats, produce, smoked, pressure cooked, canned, bottled, sauteed, baked, grilled, broiled, roasted, rotisserie, barbequed, air fried, stir-fried, and deep fried. By proxy, the phosphorous content of ME-containing meals and snacks varies from 43% to 100% higher than ME-free food depending on the gradient of beige to dark brown coloring and low density to crispy, such as 100% ME-containing, darkly browned, crunchy turkey bacon, and browned, shatterable, potato chips.

Dietary phosphorous and phosphates activate glutaminase [6] and deaminate glutamine to produce glutamate [7], an effective central nervous system stimulant. Glutamate increases gratifying stimulation, sedative, and pain-relieving companion neurotransmitters in the nucleus accumbens [8]. The GDH Part I postulates that the higher phosphorus content within ME-containing foods generates higher doses of the highly rewarding stimulant glutamate than ME-free foods. Lower phosphorus and glutamate levels make ME-free meals less enticing and addictive, have a decreased risk of increased tolerance regarding increasing daily calorie amounts consumed, and reduced likelihood of progressing towards overweight, obesity [9], and heart disease.

The Glutamate Dependence Hypothesis Part II

Hyperphosphatemia significantly increased the risk of cardiovascular disease [10]. Increased glutamate levels are

also associated with the increased presence of coronary artery disease [11]. Glutamic acid residues augment their attraction for calcium and perform a significant role in slowing and stopping blood flow [12]. The GDH Part II theorizes that the higher phosphorus content within ME-containing fare produces higher amounts of glutamate and more risk for developing systemic oxidative stress, hyperlipidemia, immune system activation, chronic inflammatory disease, vascular calcification, hypertension, and ischemic heart disease than ME-free foods.

The Glutamate Dependence Hypothesis Part III

The accelerated phosphorous-prompted production of ammonia during the conversion of glutamine to glutamate [6] contributes to highly alkaline, pH 11, ammonia toxicity [13]. Creating a potential hydrogen (pH+)-dense and potential electron (pE-)-sparse relative metabolic alkalosis more recently and precisely described as reductive stress [14]. Increased phosphorous and glutamate-sponsored ammonia toxicity results in inflammatory heart injury [15]. More poignantly, pE-impoverished hyperammonemia causes atrial fibrillation [16]. The GDH Part III proposes that the higher phosphorus content within ME-containing fare produces more elevated amounts of glutamate and ammonia and a more substantial risk for developing hyperammonemia-launched relative metabolic alkalosis, reductive stress, atrial fibrillation, and stroke than ME-free foods.

The following detailed method trials whether ME-containing nutriment is more alluring, rewarding, addictive, and cardiotoxic than ME-free meals. As importantly, does ME-containing fare exhibit more tolerance, progression, and withdrawal than ME-free provisions?

Method

Study Disqualifiers

Meal ingredients were void of not pasteurized and pasteurized dairy. The latter is a Maillard-reaction intermediate product [5]. Organic, conventional, grain-fed [17], and grass-fed dairy contains casomorphin [18], dairy-opiate. Casomorphin is not one of the most common diet-prompted sedatives and pain relievers consumed. It contributes to weight gain because casomorphin increases constipation by slowing peristalsis and nutrient absorption. The resulting intraluminal stasis, toxin accumulation, and immune-activated inflammation are likely confused with weight gain from ingesting too many dairy calories. Most importantly, the addition of casomorphin skews the neuropsychiatric assessment of the four core neurotransmitters under neuropsychiatric and physiologic scrutiny.

Similarly, chocolate's anandamide was excluded from this study because it is like delta9-tetrahydrocannabinol (delta9-THC) [19-21]. Chocolate would have also influenced how the four-core mind and mood-altering neurotransmitters perform under the two different cooking conditions and temperatures.

Chocolate, dairy, and cheese were also eliminated from the present ingredients due to their very high phosphorous concentrations, regardless of ME-free or ME-containing cooking methods. And to further purify the discussion's portrayal of the average meal's translation into varying amounts of antianxiety antipain Gamma-Aminobutyric Acid (GABA) and opiates, and stimulants glutamate and dopamine within the nucleus accumbens [8].

In addition, other high phosphate-containing ingredients excluded chicken, turkey, pork, organ meats, seafood, sunflower seeds, pumpkin seeds, nuts, wheat, whole grains, amaranth, quinoa, lentils, beans, soy, and foods and beverages with added phosphates were eliminated from this investigation [22].

Method Design

After meeting all inclusion criteria, the subject consented to participate, including being a medical researcher to follow the study's protocol more readily. Having no medical problems or allergies, an unremarkable physical examination and laboratory test results, and taking no prescription or over-the-counter medications, supplements, or vitamins.

Predominantly vegan Lima Beans (LB) and Red Potato (RP) meals: Consisted of four cups of fresh frozen conventional baby Lima Beans (LB) containing 110 calories per half-cup, or 880 calories of LB, prepared as directed. Four-hundred grams of peeled, then one-centimeter-cubed conventional Red Potato (RP) having 132 calories per 100g, or 528 calories of RP, were boiled al dente, or medium. Eleven and one-half tablespoons,120 calories per tablespoon, or 1,380 calories of conventional first-pressed olive oil in tinted glass (FP), was added to the drained LB and RP. And 1.5 teaspoons of iodized sea salt for 2,788 calories of ME-free vegan nutrients split in three two-cup Pyrex containers with PBA-free lids (plastic tops not containing Bisphenol-A). Three glass 355ml bottles of filtered water accompanied each day's three meals. Prepared by the author and delivered to the subject each morning with double boiler reheating instructions for the four days' worth of meals. During this four-day culinary trial, the volunteer prepared their organic French roast black coffee after pre-prandial data collection, midmorning, and around 3 pm.

The ME-containing vegan version was identical in every way except after boiling, it was electric stovetop heated in 13.8 tablespoons, 100 calories per tablespoon, or 1,380 calories of conventional unsalted butter (u-butter). The ME-containing vegan meals were heated on stovetop setting 8, rated at 232 degrees C until very light beige.

Predominantly ovo-vegetarian eggs ranchero: It consisted of 2,304 calories of ME-free eggs, LB, and RP. The ingredient list consisted of 1.5 cups of LB or 330 calories, 200g RP at 264 calories, nine soft-boiled conventional grain-fed jumbo eggs, 90 calories each totaling 810 calories of egg, and 7.5 tablespoons of FP consisting of 900 calories FP. Boiled and drained LP and RP were topped with spooned-out soft-boiled egg, FP, salt, and stirred.

The 2,304-calorie ME-containing eggs ranchero substituted nine tablespoons of u-butter for the FP. Three stovetop skillets contained three tablespoons of u-butter, 1/3rd of the total amount of boiled LB and RP. The author added three eggs to each skillet, heated it on setting eight until light beige, and added salt afterward.

The subject slowly chews each bite and postpones drinking water until midway through each meal and mainly after finishing.

Coffee consumption was the same throughout all culinary trials and added to the similar if not identical total volume of liquid consumed. Dinner without coffee provided the same

energy and ambition as with caffeinated coffee in the morning and early afternoon. Black coffee has postulated antioxidant benefits and Soluble Receptors for Advanced Glycation End-Products (sRAGE)-binding properties [23].

Instant relief score sheet: The subject circled a number from one to ten that best measured the instantly perceived relief accompanying each of the twelve meal first chews. One, two, and three were circled for none or little ease, four through seven for corresponding grades of relief, and eight to ten to express great relief.

Pre and 40-minute postprandial inspired score sheet: Numbers one to three corresponded to slothful procrastinating. Four to seven scoring reflects uninhibited inspiration, and eight to ten documents fully inspired to continue working or engaging in a leisurely activity.

Pre and 40-minute postprandial blood pressure tabulation: The subject used the wrist blood pressure monitor in a folding beach chair with armrests. The front portion tilted its legs down at a forty-five-degree angle, with the back titled posteriorly at the same angle. The subject recorded three blood pressure readings, each after closing their eyes and imagining a tranquil scene while slowly inhaling and counting to six. Then retain the inhaled air to the count of four and slowly exhale for six seconds.

The author used the best pre and postprandial blood pressure readings for statistical analysis.

Urine pH test strips and systemic redox status: Pre and postprandial systemic redox status were measured using Just Fitter pH Test Strips for urine as first suggested by Maalouf and associates [24] and extrapolated to urine pH values from the three subranges of the plasma pH range of 7.35 to 7.45 as follows:

1. 4.5, 5.0, 5.5 corresponds to relative metabolic acidosis and systemic oxidative stress
2. 5.75 and 6.5 good redox balance
3. 6.0 and 6.25 ideal energy, performance, and redox balance
4. 6.75, 7.0, 7.25, 7.5, 8.0 relative metabolic alkalosis and reductive stress usually brought about by dangerously low oxidative stress-induced 4.5 urine pH triggering the catabolism of glutamine to glutamate and the release of highly alkaline ammonia [13].

Fasting AM to AM weight: The subject used the Health O Meter digital bathroom scale. The volunteer followed the study procedure from home on the four trial days. The subject was alone and had twenty-four-hour access to the author by phone and text. Each of the four trial days was characterized by a similar, if not identical, physically inactive, emotionally serene, low-stress, standing and sitting work-at-home routine.

Results

Instant Relief

The instant relief scale helped distinguish the first criteria of substance dependence, impaired control, from controlled therapeutic use of a ME-free substance, boiled potatoes, from difficult to limit ME-containing overeating, french fries.

ME-free cuisine averaged a glutamatergic and associated core neurotransmitter stimulant, sedative, emotional and physical pain relief value of 5.2. Phosphorous-fortified ME-containing meals averaged a perceived 87% higher instant relief value of 9.7, t=13.132, p=0.000, per Table 1. The subject commented that they would have sought second portions of ME-containing food if not in the study. ME-free food satisfied deficiencies in focus, energy, and performance without thoughts of wanting second portions.

Table 1: Phosphorous-fortified ME-containing meals.

	ME-free 2788 Cal Vegan	ME-containing 2788 Cal Vegan	ME-free 2304 Cal Ranchero	ME-containing 2304 Cal Ranchero
Instant relief 1st 2nd 3rd meal	 5 5 4	 10 10 8	 6 6 5	 10 10 10
Inspired Pre to postprand 1 Pre to postprand 2 Pre to postprand 3	 7 to 9 9 to 10 9 to 10	 10 to 10 6 to 5 4 to 3	 9 to 10 6 to 7 7 to 7	 6 to 4 5 to 3 4 to 2
Urine pH test strip Pre to postprand 1 Pre to postprand 2 Pre to postprand 3	 5.5 to 6.0 6.25 to 6.5 6.0 to 6.25	 6.0 to 5.75 6.5 to 6.5 6.75 to 6.75 AMOS	 6.0 to 6.5 5.5 to 5.75 5.0 to 5.5	 5.75 to 5.75 5.75 to 5.5 5.5 to 5.0

The potential for impaired control existed in all six ME-containing meals and was not present in all six ME-free dining.

For glutamate dependence to exist, ME-containing meals must meet each of the following five defining substance use disorder criteria, and ME-free nourishment should not meet any of the five:

1. More alluring than ME-free food.
2. More neurologically and psychiatrically rewarding than ME-free fare.
3. More tolerance in the form of the likelihood of motivation for second and third portions with corresponding increases in phosphorus, glutamate, companion neurotransmitters, and calorie amount introduced than ME-free sustenance.
4. More progression regarding overeating increasingly more significant daily calorie counts with corresponding gains in systemic oxidative stress, inflammation, weight, and cardiovascular pathology over time than ME-free cuisine.
5. More glutamate and companion reward-neurotransmitters withdrawal in the form of more focus, energy, performance-disrupting meal and snack urges, and craving, more frequently, with more amplified redox imbalance and cardiovascular ramifications than ME-free dining.

The instant relief scale results suggest that ME-containing cooking met Criteria 1, 2, 3, and to a lesser extent 4 and 5, and ME-free edibles did not.

Inspired Rating Scale

Additional criteria for substance dependence include the maladaptive implementation of a potentially habit-forming substance. Known possible and experienced cognitive and physical consequences are put off and exchanged for immediate assistance with a task, leisurely activity, or to temporarily forget about issues, problems, worries, or routine. It involves the rational irrationality of buying satisfying results now, a burger with onion rings, and paying later, inattentiveness, fatigue, bloating, distress, and weight gain.

Nicotine-dependent people knowingly and unknowingly spend hours of their waking day in nicotine withdrawal characterized by attention deficit, increased anxiety, irritability, and preoccupation surrounding not running out of nicotine, where to purchase more, and where to use next. Inspiration does not occur until the nicotine-dependent person indulges. Their nucleus accumbens-boosted stimulant, sedative, emotional, and physical pain relieved-inspiration to continue a task or past time is instantly refunded, knowing that the incoming hazardous tide of nicotine withdrawal will soon be intolerably roundabout.

The subject perceived an average of +1 more core neurotransmitter stimulant, sedative, emotional, and physical pain-relief-propelled inspiration 40-minutes after consuming the six ME-free meals, arriving at an average 40-minute postprandial score of 8.8, t=12.776, p=0.000, according to Table 1.

Their ME-containing average pre-prandial inspiration score of 5.8 sunk to an average 40-minute postprandial inspiration score of 4.5, down an average of 1.33, averaging 4.5, t=5.922, p=0.000, according to corresponding Table 1 data. Like a cocaine-dependent person chasing the initial 10 and 6 inspiration scores down to 3 and 2, respectively. The glutamate-dependent person cognitively includes their next ME-containing meal, snack, dessert, or beverage to savor and enjoy now. And deal with the emotional and physical health consequences within an hour or less.

The inspired rating scale results suggest that ME-containing meals fortified instinctive, preconscious, and conscious positions already held regarding Criteria 1, 2, 3, 4, and 5, especially Criteria 5. There is measurable and tangible glutamate and companion reward-neurotransmitters withdrawal following ME-containing meals. The subject must set a timer for when to consume their next ME-free dish because hunger is less prevalent, and they eagerly count the minutes until the next ME-containing session because of the need to settle withdrawal discomfort.

The added components of knowingly continuing the maladaptive implementation of potentially habit-forming and toxic ME-containing fare. The irrational reasoning associated with the mindful justification of acquiring ME-containing sustenance only for immediate gratification, regardless of the known consequences soon to arrive. The thought of receiving ME-free nutrients for sustained, calmly focused performance was a foreign concept for the subject until finishing the study.

Similarly, clinicians can enlist guests to participate in side-by-side comparisons of ME-containing and ME-free cuisine as an introduction to the Glutamate Dependence Hypothesis. And a potential preface to new and improved management of overweight and heart disease. The theory is not a tangible instructor. The vital longevity adventure of doing, cooking, practicing, experiencing, and feeling the difference between ME-containing and ME-free meals is the best professor and persuader for ourselves, our families, friends, associates, and staff.

Urine pH Test Strips and Redox Status

Mitochondrial Adenosine Triphosphate (ATP), notice the phosphate, is the electrical currency used in each of our 30 trillion cells. Potential hydrogens (pH+) and potential electrons (pE-) generate ideal energy when we are not in relative metabolic acidosis, oxidative stress, relative metabolic alkalosis, or reductive stress.

It is conceptually crucial to realize at this juncture, mitochondrial generation of steady ideal energy only occurs with intricate governance. A vehicle cannot maintain the speed limit without constant acceleration and deceleration within a well-maintained automobile.

Here is precisely how glutamine, glutamate, and GABA attempt to regulate and keep each of our trillions of mitochondria out of power surge (acidic oxidative stress), brownout (alkaline reductive stress), and out of the apoptosis junkyard:

1. Glutamine is the parent of glutamate and GABA. And glutamine is critical to immune function, organelle, cell, and organ safety and survival. Glutamine utilization by immune cells approximates or surpasses glucose [25]. It is more important to realize that the author is referring to dietary glutamine and not referring in any way to its oxidized forms, glutamine supplementation.
2. Dietary, added, and ME-parented phosphorous and phosphates accelerate the conversion of glutamine to glutamate. Glutamate presses the mitochondrial accelerator pedal. The more ME-containing food enters the body, the more we develop intracellular, extracellular, and intestinal oxidative stress while weakening the immune defenses of organelles, cells, and organs. The lower-pH-limit-alarm sounds when life-threatening acidic oxidative stress occurs in conjunction with excess ME consumption. An emergency catabolic mechanism paradoxically breaks down tissue and organ-based glutamine to glutamate for the life-saving alkaline by-product of glutamine to glutamate, ammonia.
3. Glutamate turns into GABA, each mitochondria's deceleration mechanism. In this way, redox balance occurs when GABA's deceleration meets glutamate energy acceleration and vice versa. ME-free dietary magnesium helps glutamine synthetase switch glutamate back into glutamine [26]. Therefore, a high nutritional phosphorus-to-magnesium ratio differentiates glutamate dependence and related cardiac pathology from glutamate assisted sustained wellness and vital longevity. In other words, ME-free dining defines itself as culinary therapeutics by its ratio of phosphorus to magnesium approaching one. Excess phosphorous-containing ME-food consumption creates dangerous depths of acidic oxidative stress and apoptosis.

Chronic exclusively eating ME-free, low-phosphorous high-antioxidant meals can spawn life-threatening reductive stress and organelle, cell, and organ death. A common sign of reductive stress is muscle cramping, and a common misdiagnosis is magnesium deficiency. Perhaps a matter of semantics, muscle cramping is more a function of excess dietary ME-sponsored phosphorous and resulting neuroexcitatory and seizure-promoting glutamate [27].

4. One last piece completes the picture at hand. Two of the following data points exhibit what the author has termed AMOS. AMOS is reductive stress producing, pH 11, Ammonia Masked Oxidative Stress, with glutamine catabolized to glutamate plus ammonia to prevent the person from expiring from metabolic acidosis. In biophysics and redox terms, highly alkaline ammonia is not without medical consequences. However, glutamine catabolism is a first-aid prevention to fatal systemic oxidative stress. Mitochondrial activity and human life only function within one narrow blood pH point range. Showing that botanical acrylamide-type MEs in vegan LB and RP and grain-fed [17] eggs ranchero is substantially more toxic than zoological heterocyclic amine-type MEs. Whether grass-fed or not, the medium rare beef steak may be less harmful than cheese chips, organic or conventional, because botanical-based acrylamides have almost double the PubMed references as harm done by zoological-based heterocyclic amines.

The soon possibly to be recognized, as the parent of all redox imbalance-based heart disease, glutamate dependence, is itself, and all its learning, mood, and wellness neurotransmitter-influencing companions, a redox imbalance-sponsored illness. Sedatives and opiates typically slow metabolism towards reductive stress and relative metabolic alkalosis, pE- brownouts while in use. And they are jumping towards oxidative stress and relative metabolic acidosis, pE- overload during alcohol and benzodiazepine-prompted GABA withdrawal. Stimulants proceed in an analogously opposite fashion.

Herein lies more reason that glutamate and other drug addictions compel people to return and progress towards consuming increasingly more significant amounts, thereby increasing tolerance and progression. Growing emotional, social, financial, cardiovascular, and other neuropsychiatric and bodily problems result.

Redox biophysics is how substance dependence merges with cardiovascular morbidity and mortality. A repetitive self-defeating ME habit uses the steps of tolerance and progression to accumulate increasing consequences in every aspect of survival and living.

ME-free vegan meals trended toward redox balance, calmly focused, driven, and ideal energy 40 minutes postprandially at an average rate of 0.3333 urine pH units, t=0.5677, p=0.000, according to Table 1.

ME-free ovo-vegetarian cuisine trended toward redox balance, calmly focused, driven, and ideal energy 40 minutes postprandially at an average rate of 0.4166 urine pH units, t=0.4081, p=0.000.

Taken together, more phosphorus/magnesium, glutamate/GABA-balanced ME-free nutrients provided sustained energy and wellbeing longer, and in a vital longevity-friendly manner. And without the ups and downs in energy, focus, and performance, and without entering the vicious repetitive self-defeating addiction revolving door, to nowhere pleasant.

ME-containing vegan food trended toward severe redox imbalance, AMOS, reductive stress, fatigue, a 4-second dizzy spell and perceived heart arrythmia, and malaise, inattentiveness, disorganization, and fatigue 40-minutes postprandially at an average rate of -0.083 urine pH units, t=-0.6104, p=0.000.

ME-containing ovo-vegetarian nutriments trended toward redox imbalance, forty-minutes postprandially at an average rate of -0.25 urine pH units, t=-1.2638, p=0.000.

The urine pH and redox status data presented here also contribute to the evidence substantiating the Glutamate dependence hypothesis and its close relationship with heart disease.

Pre-Prandial and 40-Minute Postprandial BPs

Mounting evidence that glutamate dependence exists peaks with the pre and 40-minute postprandial blood pressure data. Speculating skeptics and doubters can no longer spout there is a lack of proof exhibiting convenience. Highly processed food, snacks, and beverages are physically habit-forming because there is no measurable drug effect or drug withdrawal.

The opiate effect of all twelve, 100% of ME-free and ME-containing meals resulted in reduced blood pressure readings 40 minutes after consumption. Both cooking methods triggered the cluster of stimulants, sedatives, and mindful and bodily pain relievers within the nucleus accumbens and Ventral Tegmental Area (VTA). The primary blood pressure-lowering member of the four core neurotransmitters under investigation is opiates. The other members either have no or little effect on lowering blood pressure during the first 40 postprandial minutes. As previously discussed, and referenced, hyperphosphatemia, hyperammonemia, and glutamate are known menaces to the cardiovascular system [28]. Therefore, it is reasonable to conclude that the hypotensive effect of all twelve of the ME-free and ME-containing meals was responsible for the collective decrease in systolic and diastolic blood pressures. In addition, varying amounts of opiates were accountable for degrees of instant relief, inspiration, redox balance, and the satisfying emotional and physical benefits associated with glutamate, dopamine, GABA, and opiate withdrawal, popularly misperceived as satiation.

The six ME-free meals increased opiate tone and inversely lowered postprandial systolic readings by an average of -12.6666, t=-1.7096, p=0.000, from Table 2, and diastolic values by -6, t=-1.3468, p=0.000.

The significantly more phosphate-containing and glutamate-generating six ME-containing provisions almost doubled the opiate presence in the pleasure center by inversely tumbling systolic measurements by -21.6666, t=-2.2141, p=0.000, and diastolic numbers by -10, t=-1.6419, p=0.000.

By proxy, opiate withdrawal syndrome is evident in the higher systolic readings in the ME-containing cluster of data compared to the ME-free systolic readings.

Higher instant and 40-minute postprandial opiate levels were

Table 2: The six ME-free meals increased opiate tone and inversely lowered postprandial systolic readings.

	ME-free 2788 Cal Vegan	ME-containing 2788 Cal Vegan	ME-free 2304 Cal Ranchero	ME-containing 2304 Cal Ranchero
1st pre to postprand 2nd pre to postprand 3rd pre to postprand	162/87 to 142/74 150/83 to 148/74 166/90 to 151/87	178/85 to 150/74 180/96 to 168/78 182/96 to 156/83	154/83 to 146/81 166/92 to 157/86 164/82 to 142/79	176/88 to 151/77 166/80 to 153/79 170/81 to 144/75
AM to AM weight change in pounds	169.4 to 167.4 Minus 2.0 lbs.	166.4 to 168.0 Plus 1.6 lbs	166.4 to 167.4 Plus 1.0 lb. Organic 2304 Cal Ranchero Minus 2.5 lbs.	169.2 to 171.2 Plus 2.0 lbs. Organic 2304 Cal Ranchero Minus 0.6 lb.

associated with ME-containing meals prompting the subject to wish they were not in the study to obtain second and third portions of ME-containing food. The volunteer denied thinking about having a double amount of ME-free food. The subject often ate their next ME-free dish out of being in the study, not secondary to hunger or craving. The reverse was not true regarding the next ME-containing engagement.

The primary takeaway is that phosphorus-rich and glutamate-infusing ME-containing delicacy, in the relative absence of the sedative and pain-relieving GABA, compel the nucleus accumbens to significantly increase the amount of hypotensive-opiate output comparable to the ME-free versions. Glutamate regulates opiate output during glutamate intoxication to help offset some of the cardiovascular damage inherent in ME-containing cooking, grilling, and baking. Therefore, regardless of concurrent glutamate and ME-induced opiate intoxication and withdrawal, Maillard-reaction End-Product Dependence (MED) is a more general diagnostic entity than the all-encompassing and specific Glutamate Dependence. A second, more descriptive alternate diagnostic entity would include Phosphorus dependence.

AM to AM Weight

It has been known for decades that MEs cause systemic oxidative stress, triggering the immune system [29]. And cause inflammation or swelling within each of our trillions of cells. It has been known for years by some that weight gain is not the exclusive province of excess calorie consumption. The author believes that weight gain is more a function of ME-prompted immune system activation, chronic swelling, or inflammatory disease, facilitating cardiovascular disease.

The notion that ME-induced inflammation has more to do with weight gain than calories has also birthed this final sub-investigation. The two ME-free food days resulted in an average weight loss of 0.5 pound per day, and the identical calorie ME-containing version averaged 1.8 lbs. per day gain. Two exact-calorie meal plans prepared differently with opposite weight change results illustrate that calories can have little to do with weight loss and gain.

The organic ME-free and ME-embodied eggs ranchero equivalents had minus 2.5 lb. and 0.6 lb. losses per day, respectively. Organic eggs have more free-range cuisine and less ME-containing grain feed. Conventional eggs come from chickens that eat ME-containing phosphorus-rich grain. Like humans, the more processed grain consumed, the higher the prescription costs at the pharmacy. Oxidized grain-fed poultry conceivably has high systemic oxidative stress and total cholesterol transferred to human consumers. The result being conventional and organic eggs influence weight change very differently in the subject studied.

Many extensive Glutamate Dependence Hypothesis replications need to occur to validate and extrapolate these findings to clinicians and health entities worldwide. In this rapidly geopolitically protean world, clinicians cannot wait for leadership to appear in their regions. Time is of the essence as cardiovascular disease continues to grow faster than most countries' Gross Domestic Products (GDPs). In substance dependence recovery centers, we teach: If your actions aren't working, it is time to do something different. Perhaps now is the ideal time to micro-replicate these findings among family, associates, staff, and guests.

Discussion

If the Glutamate Dependence Hypothesis is replicated and verified in a big way, the following logical questions include:

1. Is glutamate the primordial gateway drug?
2. Do animal studies showing maternal junk-food consumption creating highly processed food preferences in their offspring translate to humans?
3. Are commercial ME-containing baby formulas and food contributing to future, more elevated incidences of heart disease, overweight, and other oxidative stress-based illnesses?
4. Is the detoxification and treatment of glutamate dependence best delivered as a pill or as a dietary phosphorous/magnesium, glutamate/GABA-balanced culinary therapeutics-based 12-Step self-help program and meetings such as Overeaters Anonymous?

These few questions are merely appetizers to the thousands of queries and volumes of researched answers required yesterday.

Conlusion

The data presented here suggest an intimate association between dietary Maillard-reaction end product-induced glutamate dependence, overeating browned food only, and cardiovascular disease. Phosphorous and glutamate-prompted redox imbalance, hyperlipidemia, immune system activation, chronic inflammatory disease, vascular calcification, hypertension, ischemic heart disease, atrial fibrillation, and stroke may be symptoms of Glutamate dependence.

Conflict of Interest

The author has no known conflict of interest to disclose.

Funding

No.

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