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Evidence of Stable Isotope ^{13}C Causing All Cancers

Reginald B. Little

***Abstract* — Evidence for a general mechanism of genesis of all cancers is given by presenting a puzzle and using recent results of aspartame and acesulfame-K to fit the pieces of the cancer puzzle together for proof of the mechanism of oncogenesis. Aspartame and acesulfame-K have been linked to cancer. Aspartame is a modified dipeptide (methylated phenylalanine (modified) and aspartic acid), so modified amino acids were thought to be more innocuous. The author previously noted isotopically enriched and/or clumped bond-specific amino acids and oligonucleotides have different biochemical reactions for different biology. Acesulfame-K is not a peptide or oligonucleotide but it has some similar chemical structure to oligonucleoside and reversibly decomposes to affect oligonucleosides and affect cells and bacteria cells like E Coli for producing isotopically enriched amino acids indirectly. E. Coli is present in the human digestive system and is known to accelerate stable isotope enrichment of amino acids with ^{13}C, ^{15}N, and/or ^{17}O. Thereby acesulfame-K and aspartame induce isotopic enrichments and excessive ^{13}C, ^{15}N, and/or ^{17}O introductions into proteins and nucleic acids. Such effects of ^{13}C isotopes as induced by the bacteria and these chemicals like aspartame and acesulfame-K may be coupled to effects of static magnetic field(s) and radio frequency electromagnetic waves for explaining the complexity of results and inconsistent results from separating these effects. Thereby the ^{13}C isotope enriched phenylalanine and/or aspartic acid may be the basis of malfunctioning normal cells for the genesis of cancer. Further support for this theory of ^{13}C causing cancer by ingestion of aspartame is given by also noting the mystery and confounding results of monosodium glutamate causing cancer as the glutamate is synthesized by bacterial culture and the resulting ingested glutamic acid enriched with ^{13}C and ^{15}N and possibly ^{17}O causes adverse biochemistry and enzymatics (relative to glutamate from healthy plants and animals rather than the bacterial industrial glutamate in MSG) for cancer and other diseases as explaining the observation of cancer and other diseases from acute and chronic MSG ingestion over months and years. The third case of bacterial production of insulin during the last 25 years for recent correlation to insulin causing cancer relative to less cancer from older methods of insulin production is more evidence of bacterial production of amino acids and peptides causing enriched heavy isotopes and the resulting enriched amino acids and peptides causing cancer relative to ingestion of ^{13}C enriched carbohydrates.**

***Keywords* —** Aspartame, ^{13}C, Cancer, Nuclear Magnetic Moments, Magnetochemistry.

I. Prior Theory of Cancer Genesis by Stable Isotopes with Nonzero Nuclear Magnetic Moments (NMMs)

A theory of the origin of cancer by ^{13}C replacing ^{12}C in biomolecules of proteins and nucleic acid was discovered in 2013 [1]. The theory was developed further and archived in 2018 [2]. Prior theories had looked more at the lighter element hydrogen (^{1}H) and its isotope {deuterium (^{2}D)} causing and/or affecting cancer [3] by mass isotope effect. The mass difference of ^{12}C to ^{13}C is much smaller than that of ^{1}H to ^{2}D, so mass isotope effects were not previously thought to affect biochemical dynamics significantly. But the author's theory of spin and orbital angular momenta of nucleons and nuclei was determined to contribute stronger effects (than mass alone) by further providing media for coupling static magnetic fields and dynamic magnetic fields of radio waves and microwaves for causing cancer [2]. Prior experiments have given contradicting evidence of radio waves and magnetic fields causing cancer [4]–[6]. The author notes the combinations of the isotopes of ^{2}D, ^{13}C, ^{15}N, ^{17}O, ^{25}Mg, ^{33}S, and other stable isotopes from minerals {all having a nonzero spin and nuclear magnetic moments (NMMs)} give new bases for radio waves and magnetic fields coupling to samples in different hard to control scenarios in human subjects for causing contradictory cancer results [2].

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R. B. Little, Stillman College, USA.
(corresponding e-mail: redge_little@yahoo.com)

II. NMMs Altering Enzymatics and Biochemical Reactions

NMM of ^{13}C was proposed to cause cancer due to a positive NMM of ^{13}C relative to null (0) NMM of ^{12}C [2]. The author noted that 1% relative abundance of ^{13}C on earth leads to various conditions (chemical, electromagnetic fields, diet, stress, genetics, etc.) causing accumulation and clumping of ^{13}C inside cells of organisms for causing disease [2]. Moreover, the author noted clumping into specific chemical bonds and positions in various biomolecules for causing specific altered interactions, dynamics, and enzymatics for malfunctioning biomolecular dynamics causing normal cells to transform into cancer cells [2], [7]. The author noted stable isotopes of ^{15}N, ^{17}O, and ^{33}S (relative to ^{13}C) more easily replace ^{14}N, ^{16}O, and ^{32}S (and more difficult ^{12}C) in biomolecules due to electron precise C atom and more difficult rehybridizations of carbon during bond rearrangements [2]. The author noted ^{15}N and ^{17}O could clump into biomolecules faster than ^{13}C due to electron excessiveness for giving internal spin and magnetism by ^{15}N and ^{17}O for catalyzing ^{13}C replacements of ^{12}C [2]. The resulting ^{13}C in biomolecules and ^{15}N and ^{17}O would by the author's theory manifest quantum mechanical seeping of NMMs from these nuclei for positive NMM pulling Lewis e^- e^- pairs toward nuclei and negative NMMs of ^{15}N and ^{17}O pushing Lewis e^- e^- pair away from nuclei for softer e^- e^- pairs and separations for radical like e^- e^- pairs (Reggie Acids and Bases) as the consequent 'nuclear pressures' interact with the spins differently [2], [7], [8]. On the bases of such, the enzymatics of enzymes and substrates; and interactions for nucleophilic and electrophilic substitutions and additions take on some radical-like natures for mixed heterolytic bond cleavages and bond formations with homolytic chemical bond rearrangements. Buchachenko [9] had noted such possible mixed Lewis acid-base type dynamics with mix with radical-type dynamics. Here a mechanism is given and evidence is given for such mechanism. Nuclear spin and angular momenta in the current author's theory give bases for such mixed bosonic and radical (heterolytic and homolytic) chemical dynamics [2], [7]. By such enzymatics of glycolysis reactions and Kreb cycle, enzymatics were noted to change for an acceleration of glycolysis and suppression of Kreb cycle for explaining the Warburg Effect [2]. Here the evidence is given by recent experimental studies of this isotopic mechanism of cancer.

III. Correlation of Aspartame and Acesulfame-K to Cancers

On April 4, 2022, researchers in France published an extensive study that correlated diet beverage consumption having artificial sweeteners (aspartame and acesulfame-K) with cancer [10] of all types. Some diet beverages were sweetened with aspartame, which is a dipeptide of monopeptides: aspartate and (modified) phenylalanine (as methyl phenylalanine). Other beverages had combinations of acesulfame-K and aspartame as artificial sweeteners acesulfame-K by itself has after taste and in industrial applications, it is mixed with aspartame for sweetening with reduced after bitter taste. Do these results raise many issues as to how can components of proteins cause cancer? The phenylalanine is modified with added methyl group which is thought to form methanol and phenylalanine in small intestines during digestion. So how could aspartame cause cancer? And how could acesulfame-K (having no amino acids) cause cancer? But moreover, this study linking aspartame and acesulfame-K to cancer gives proof of the author's prior theory of isotopes causing cancer as the stable isotopes may clump in the sugar substitutes to cause differences. Furthermore, on basis of the author's theory, an even greater correlation between aspartame and acesulfame-K to cancer may be determined if the effects of radio waves and static magnetic fields are included in conjunction with sugar substitutes. In this communication, the author presents the pieces of the puzzle and fits the pieces of the cancer puzzle together to demonstrate and give evidence that stable uncommon, nonprimordial isotopes (^2D, ^{13}C, ^{15}N, ^{17}O, ^{25}Mg, ^{33}S) cause cancer and ^{13}C directly causes cancer.

IV. Why do Aspartame and Acesulfame-K Cause Cancer?

But why would aspartame and acesulfame-K cause cancer? Well, aspartame is synthesized by fermentation from aspartic acid and phenylalanine. And these amino acids are in all proteins. During digestions, proteins are broken down into amino acids. And during digestion of aspartame, phenylalanine, methanol, and aspartic acids are produced. So, what is it about aspartic acid and phenylalanine from aspartame that causes cancer, whereas aspartic acid and phenylalanine from other foods do not cause cancer? Is it the high levels of these amino acids (phenylalanine and aspartic acid) from aspartame that cause cancer? Is it the dipeptide linkage that is carcinogenic? Is it the methanol (from modified phenylalanine) that causes cancer? Methanol is thought to be converted to formic acid and methanol is known to be in or produced by digestions of some fruits and vegetables, so methanol is not thought to be the culprit. Aspartic acid has been associated with inducing cancer and tumors [11]. Aspartic acid is a nonessential amino acid. Phenylalanine is an essential amino acid. So, it is likely the isotopically modified

phenylalanine, methanol, and aspartic acids that cause cancer on basis of the author's theory. Unusual aspartic acid has been linked to the cause of cancer in guinea pigs [12] and the author noted possible enrichment of aspartic acid with ^{13}C and ^{17}O as a possible cause of the development of cancer in guinea pigs [2], [7]. The author here notes ^{13}C in phenylalanine, methanol and aspartic acid are the reasons aspartame causes cancer.

V. Acesulfame-K Induces Isotopic Enriched Carcinogenic Biomolecules

But what about acesulfame-K? Acesulfame-K is not synthesized from amino acids, but it is synthesized from precursors having peptide and oligonucleotide like structures. And acesulfame-K can possibly decompose and interact to cause decomposition of oligonucleotides for causing cancer. Moreover acesulfame-K is known to not only disrupts human cells but also bacteria cells [13]. For instance, experimental data have shown acesulfame-K accelerating reproduction of bacterial E. Coli, whereas aspartame decelerating E. Coli reproduction [13]. E Coli is further known and commonly used to enrich amino-acids and other biomolecules with stable, uncommon isotopes of ^{13}C, ^{15}N, and ^{17}O [14] fitting the author's theory of cancer. E. Coli is common bacteria as well as others in the guts and intestines of humans and some animals. Therefore, acesulfame-K and aspartame in diet soda, when drank regularly, can with corn source (C4) carbohydrates and carbonates (known to enrich in ^{13}C and ^{17}O under pressures) in beverages accelerate E. Coli numbers in the guts and provide media for E. Coli to produce isotopically enriched amino acids; as the guts act as fermenting reactors for E. Coli to enrich amino acids like glycine, phenylalanine, lysing, leucine, glutamic acid and aspartic acid with ^{13}C, ^{15}N and ^{17}O. The resulting isotopically enriched amino acids like aspartic acid and phenylalanine (from acesulfame-K accelerated E. coli reproduction) then can cause cancer in the body.

VI. Why is Aspartame Enriched with ^{13}C?

But why does aspartame contain elevated amounts of ^{13}C? The aspartame is synthesized by the production of aspartic acid and phenylalanine from bacterial cultures (B. Flavum and C. Glutamicum, respectively) by fermentation processes. The fermentation process here stressed the cause of the isotopic enrichment of the phenylalanine and aspartic acid used to form the aspartame. The industrial process involves first obtaining bacteria from cultures of each and added to industrial reactors supplied with nutrients. Upon bacterial multiplication, bacterial media are added to a second reactor for better growth. The second chamber is supplied with warm water, carbohydrates, glucose, sucrose, and molasses. Acetic acid, alcohols, hydrocarbons, ammonia, and urea are also added. These feeds (foods) for the bacteria are known to be enriched with ^{13}C; so these enrich the feeding, growing reproducing bacteria with ^{13}C. Vitamins, amino acids, and minor ingredients are also a part of growth media of the second, seeding reactor. With sufficient growth, the growth media is pumped to the third reactor for fermentation. More growth media is provided for greater bacterial growth. The bacteria grow and produce large amounts of amino acids. Ammonia and water are added to regulate the pH during growth for optimum fermentation. When sufficient aspartic acid and/or phenylalanine amino acids have been produced; then amino acids are isolated by centrifugation process. The author notes centrifugation can further separate amino acids having different fractionations of isotopes. The author proposes centrifuging biological molecules in magnetic fields for separating isotopic enriched biomolecules in ways not currently practiced by biologists and biochemists. The amino acids are purified by crystallization. The phenylalanine is methylated. The resulting aspartic acid and methylated phenylalainine (amino acids, monopeptides)) are then used to make the aspartame (dipeptide). The ^{13}C and ^{15}N are involved and enriched into the aspartame in such bacterial fermentation process as it is known that B. Flavum can enrich aspartic acid with ^{13}C and ^{15}N [15], [16]. And it is known that C. Glutamicum can enrich phenylalanine with ^{13}C [17], [18]. Therefore, the synthesized aspartame can be enriched with ^{13}C and possibly ^{15}N.

VII. Industrial Production of Aspartame via Palladium Catalyzed Coupling

In addition to the bacterial fermentation processes favoring ^{13}C enrichment of the aspartic acid and phenylalanine, it is also important to note that the chemical coupling of the aspartic acid to the phenylalanine involves palladium catalyzed reaction. It is known that reactants with carbonyl groups can undergo ^{13}C enrichment via palladium catalysis [19]. The aspartame is formed from phenylalanine and aspartic acid by modifying the phenylalanine to L-phenylalanine methyl ester and modifying the aspartic acid by adding benzyl rings to all sites except the site to bind the L-phenylalanine methyl ester. The fusing of the L-phenylalanine methyl ester to the modified aspartic acid is performed by adding the L-

phenylalanine and modified aspartic acid to acetic acid in presence of palladium catalyst and hydrogen. The acidic conditions favor aqueous carbonates and the carbonates of acetic acid with -$^{13}C(O)_2^{2-}$ can exchange with the carbonates on the aspartate and phenylalanine as catalyzed by the palladium. The negative nuclear magnetic moments (NMMs) of the palladium facilitate such $^{13}C(O)_2^{2-}$ replacing $^{12}C(O)_2^{2-}$ groups in the modified phenylalanine and modified aspartic acid for further enriching the phenylalanine and aspartic acid with ^{13}C which leads to enrichment of ^{13}C in the aspartame product on an industrial scale. Such enriched aspartame is used in beverages and is enriched with ^{13}C from the fermentative processes and the palladium coupling reactions. The prior mass analysis of aspartame reveals it is enriched with ^{13}C to a level of sugars from C4 plants [20].

VIII. Measured Enrichment of ^{13}C Enrichment in Aspartame, Sucralose and Sacchrin by Hope John and Coworkers [20]

The prior mass analysis of aspartame reveals it is similar in ^{13}C enrichment (with aspartame $\delta^{13}C$ = -10.58‰) to a level of sugars from C4 plants (with C4 plant sugar $\delta^{13}C$ ranging from -10.22‰ to -10.68‰) [20]. On the basis of data from Hope John and coworkers [20], aspartame is thereby observed to be more enriched in ^{13}C in comparison to most peptides and amino acids in plants (with plant amino acids and peptides having $\delta^{13}C$ approximately -21.43‰ to -25.88‰). Fruits and vegetables have $\delta^{13}C$ ranging from -24.11‰ to -26.49‰ [20], which is also much less enriched in ^{13}C than aspartame and other artificial sweeteners like sucralose and saccharin. The more negative the $\delta^{13}C$ then the more depleted the ^{13}C and the less negative the $\delta^{13}C$ then the more enriched the ^{13}C in the substances. Aspartame (with less negative $\delta^{13}C$ = -10.58‰) is thereby measured to be highly enriched in ^{13}C relative to typical proteins from plants and even carbohydrates and sugars from C3 plants. C3 plants are less enriched with ^{13}C ($\delta^{13}C$ ranging -33‰ to -24‰) relative to C4 plants {like corn} ($\delta^{13}C$ ranging -16‰ to -10‰). Corn other C4 plants and aspartame, saccharin, and sucralose are therefore more enriched in ^{13}C and cause cancer due to enriched ^{13}C relative to proteins, fats, and carbohydrates from C3 plants. Aspartame is even more enriched in ^{13}C than proteins and fats from most animal food sources. Ingesting aspartame thereby exposes cells to larger amounts of ^{13}C in aspartic acid and phenylalanine than obtained from these amino acids obtained from plants and animal foods for altered digestion and metabolism over long time periods of eating for causing cancer, diabetes, and other diseases. The author theorizes that such enriched ^{13}C in the aspartame relative to plant foods is causing cancer. It is also important to consider data from Hope John and coworkers [20] for saccharin and sucralose (with $\delta^{13}C$ = -10.97 ‰ and $\delta^{13}C$ = -10.56‰, respectively) as their $\delta^{13}C$ are also highly enriched and in the range of aspartame ($\delta^{13}C$ = -10.58‰). Saccharin and sucralose have also been correlated with causing cancer. So the isotopic author's theory of ^{13}C causing cancer is further demonstrated here by saccharin and sucralose (although less so than data shows aspartame causing cancer as aspartame has been more strongly correlated with cancer than sucralose and saccharin). The data of Hope John and coworkers [20] clearly show less negative $\delta^{13}C$ of all three artificial sweeteners (aspartame, sucralose and saccharin) and therefore greater ^{13}C enrichment of these artificial sweeteners relative to proteins and carbohydrates from plants and even ^{13}C in healthy human tissue, which is approximately $\delta^{13}C$ = -21‰ to -23‰.

$$\delta 13C\ (\text{‰}) = [(13C/12Csample - 13C/12Cstd) / 13C/12Cstd]\ X\ 1000\text{‰} \quad (1)$$

IX. Many other Supportive Studies of the Author's Theory for ^{13}C in Aspartame, Peptides, and other Biomolecules Causing Cancer and Bacteria and Viruses Enriching the Biomolecules with ^{13}C, ^{15}N, and/or ^{17}O

The theory of the author for heavy isotopes in amino acids and other biomolecules causing cancer as explaining carcinogenicity of aspartame was submitted earlier in April 2022 and reviewed and advertised by industrial natural sweetener leader [21]. There are many other studies that support the theory of the author for ^{13}C in aspartame, peptides, and other biomolecules causing cancer and bacteria and viruses enriching the biomolecules with ^{13}C, ^{15}N, and/or ^{17}O for causing isotope effect for triggering cancer. Aspartame has been observed to inhibit plant growth [22]. The decomposition product from aspartame digestion phenylalanine has been observed to induce tumor cell line growth [23]. Such an effect of phenylalanine on accelerated tumor growth may result from phenylalanine replacing tryptophan in peptides and proteins for altered enzymatics and DNA and RNA [24].

X. Second Evidence from Monosodium Glutamate (MSG)

In addition to this correlation of ^{13}C in bacterial produced aspartame and cancer, the bacterial production of glutamic acid for the MSG industry is a second correlation between bacterial production of amino acids and proteins and the isotopic enrichment to correlate to abnormal cell function and cancer. Prior studies have shown the activity of MSG on glutamate receptors for causing neurotransmitters to release with consequences to physiological and pathological activities in living organisms [25]. On the basis of the RBL theory of isotopes in proteins causing cancer, the altered ^{12}C for ^{13}C may alter binding interactions to cause cancer. There are three groups of metabotropic receptors that sense glutamate. There are also 4 types of ionotropic receptors that sense glutamate. The central nervous system (especially the hypothalamus, hippocampus, and amygdala) depends on these receptors and interactions with glutamate. MSG has been demonstrated to alter neuron activities. MSG has been associated with insulin resistance [26]. Liver transaminase was observed to be lower after MSG consumption, which indicates liver damage [27]. Important changes in amino acids in pig blood have been observed after MSG consumption [28]. Studies have demonstrated the toxic effects of MSG on reproductive processes in animals and humans [29]. All of these effects of MSG on the cells in the organisms can be reasoned by enrichment of the glutamic acid with heavier isotopes of ^{13}C, ^{15}N, and/or ^{17}O by RBL theory [1], [2], [21]. The aspartate and glutamate in aspartame and MSG, respectively, have been associated with a positive association of aspartate to prostate and breast cancers at 95 % confidence integral, but glutamate showed no correlations with these cancers [30].

XI. Third Evidence from Bacterial Insulin Peptide Causing Cancer

Researchers recently observed that certain insulins cause cancer after prolonged use. The author correlates and discovers those cancer-causing insulins to their production by bacterial fermentation processes. A recent press release describing the French study from March 2022 [31] and its correlation of aspartame to cancer attempted to negate this research correlation by noting that some recent methods for insulin production also involve bacterial fermentation processes. In this skeptical analysis, the author noted: "Genetic processes like this are widely used today. One stunning example is Humulin. Diabetics used to develop allergic reactions to the beef and pork antigens in insulin derived from cows and pigs because it was slightly different from human insulin and contained impurities. Scientists found a way to put human insulin genes into *E. coli* bacteria and put them to work producing true, pure human insulin. This was such a great advantage to diabetics that animal insulins are no longer even available. "But here the author notes just as the isotopic enrichment in cow and pig insulin is different from human insulin, the bacterial isotopic composition is even more different from humans, pigs, and cows, such that the author correlates such severely isotopic altered peptides from bacteria translation with cancer genesis in animals and humans. Prior and ongoing correlations between bacteria and cancer support the authors' theory as outlined here. In 2021, a press release from MD Anderson Cancer Center [32] noted: "Independent of weight, insulin increases cell production and reduces cell death. That means there is more opportunity for something to go wrong and cancer to develop. Long-term increased insulin raises your risk for breast, prostate, and colorectal cancers. "Elevated branch chain amino acids (essential) correlate with diabetes [33] and ^{13}C in biomolecules has been associated with accumulation of branch chained amino acids [1], [2].

XII. Fourth Evidence from Direct Observation of Bacterial Infection Causing Cancer

A researcher recently discovered aggressive prostate cancer and its outcome depends on bacteria in the prostate. Genetic analyses of urine and prostate tissue from men with and without prostate cancer determined five species of bacteria causing the more aggressive outcome of prostate cancer [34]. This and other correlations of bacteria to cancer are supportive of the author's theory of the bacteria producing isotopically enriched biomolecules which when absorbed into healthy human and animal tissue cause cancer. For instance, the bacteria Helicobacter pylori have previously been linked to stomach cancer [35]. And during the 1980s scientists noticed that a rare form of cancer previously observed in elderly Jewish men was developing in increasingly occurring in young gay men [36]. And it was discovered that the human papillomavirus can cause cervical cancer [37]. Richard McNally discovered that clusters of children who developed childhood cancer and were born in the same area may have been influenced by the mothers having some infection during pregnancy that may have induced cancer [38]. Anthony Epstein attempted to observe by microscopy the correlation of malaria infection with cancer with no success. But an unfit sample of tumor biopsy from Uganda led to the serendipitous discovery as Epstein cultured the sample and by chance observe it growing an unknown form of herpes virus [39], known as Epstein Barr virus. Epstein Barr was later observed in almost all cases of Burkitt lymphoma [40]. But why would bacteria and/or

viruses trigger cancer? In addition, in 2018, the author previously published that viruses and bacteria tend to have altered heavy isotopes in specific bonds for altered interactions and enzymatics with biomolecules in host humans and animals for infections [1], [2], [21]. Consistent with these correlations of bacteria and viruses to cancer and the authors' theory of the bacteria and viruses enriched with heavy isotopes of ^{13}C, ^{15}N, and/or ^{17}O is the prior correlation of greater isotopic enrichment of certain biomolecules during infection and immune response relative to no immune response in humans. The immune response and its prior alterations of the intake of ^{13}C from ingested food [41] are more evidence supporting the overall theory of the author of the ^{13}C, ^{15}N, and ^{17}O in antigens from foreign bacteria and viruses and antibodies from the immune response of the host. More evidence has been provided of bacteria altering ^{13}C isotopes as by bacteria Sporosarcina sp. DSK25 [42]; where researchers noted "Carbon isotope fractionation between IPLs and glucose showed a positive correlation with bacterial growth pressure, whereas hydrogen isotope fractionation between IPLs and growth water exhibited an inverse correlation with growth pressure, suggesting that fractionation of both carbon and hydrogen isotopes is pressure dependent. We further examined the effects of pressure on the isotope enrichment factors of". And a different study noted the ease of bacterial isotopic enrichment with heavy isotopes of ^{13}C is a basis for using bacteria-enriched samples for tracking bacteria migration in different environments [43]. Researchers in this study reported a novel bacterial tracking approach, based on altering the stable carbon isotope value ($d^{13}C$) of bacterial cells, which provides specific and sensitive detection and quantification of those cells in environmental samples. This approach was applied to the study of bacterial transport in saturated porous media. The transport of introduced organisms was indicated by mass spectrometric analysis of groundwater samples, where the presence of ^{13}C-enriched bacteria resulted in increased $d^{13}C$ values of the samples, allowing specific and sensitive detection and enumeration of the bacteria of interest. "We demonstrate the ability to produce highly ^{13}C-enriched bacteria, present data indicating that results obtained with this approach accurately represent intact introduced bacteria, and include field data on the use of this stable isotope approach to monitoring in situ bacterial transport." So in general many bacteria and viruses intrinsically enrich with uncommon nonprimordial isotopes like ^{13}C; so using bacterial cultures for human food sources should be approached with caution.

XIII. Conclusion

A recent study gives a correlation between acute and chronic use of aspartame and acesulfame-K ingestion in sodas to cancers of all types. Such study is consistent with the prior theory of RBL of isotopes of ^{13}C enrichment and/or clumping into specific bonds of biomolecules of proteins and nucleic acids for cancer genesis and advancement. On the bases of these considerations, care should be taken for use of bacterial media and algae [15]–[18], [44] for synthesizing drugs and foods for humans in the future [45]. There are currently pressing questions concerning farming and animals and human over-population and the environment and the use of these new technologies for new food sources for less impact on the environment and global warming. But care should be taken to assess and measure subtle stable isotope effects of ^{2}D, ^{13}C, ^{15}N, ^{17}O, ^{25}Mg, and ^{33}S (which might be introduced into humans by such technologies of algae and bacteria growth and fermentative processes and some chemical catalytic processes) on human health for diseases.

Conflict of Interest

The authors declare that they do not have any conflict of interest.

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Reginald B. Little is the principal author of this manuscript. He was born in Lithonia, Georgia (USA) on July 27, 1966. He was educated at Stoneview Elementary in Lithonia, Georgia. He attended Humphries Elementary School 1976-77, then Crawford W. Long Middle School during 1977-1980. He attended Walter F. George High School during 1980- 1984, graduating as Valedictorian and named Atlanta's Teenager of the Year (Fuqua Industries), and was a part of American Academy of Achievement in Minneapolis, Minnesota in July 1984. He earned his bachelor of chemical engineering in 1989 at Georgia Institute of Technology in Atlanta, Georgia (USA). He earned an MS degree in chemical engineering in 1992 at Louisiana State University in Baton Rouge, Louisiana (USA).

In 1994, He decided to work toward his Ph.D. in chemistry (completed in 1999) and became a part of Prof. Mostafa A. El-Sayed's group in the Laser Dynamics Laboratory in the School of Chemistry at Georgia Institute of Technology in Atlanta, Georgia (USA).

Mr. Little is currently an Associate Professor of Chemistry at Stillman College since 2017. He taught chemistry at Georgia Perimeter College from 2015-2016. He taught chemistry at Emory University during 2014-2015. He worked momentarily in chemistry at South Carolina State University in 2013. From 2010- 2013, he served as an adjunct Professor and Research Assistant at Howard University in Dept of Chemical Engineering. He was an Associate Professor of Chemistry during 2007-2010 at Elizabeth City State University in Elizabeth City, North Carolina. He was Assistant Professor of Chemistry at Florida A&M University during 1999-2007. Prof. Little is a member of ACS, AICHE, NSBE, and APS.