May 2025 # 74

BNHC E-MAGAZINE

BioNatural Healing College

Introducing a convenient way! ***Earn your diploma online with one of the most comprehensive study programs available in social network***

Online Master's Degree and 4 Diplomas

Offers a dynamic quality education to change and improve your quality of life by offering online education In convenient way.

Online Diploma and Master's Degree in BioNatural Health Sciences
Continue Accepting Application
To Apply, please get in touch with
info@bionaturalhealingcollege.org

FIND YOUR KEY TO SUCCESS!

Contents

On behalf of BioNatural Healing College (BNHC), it is with great pleasure that we extend Thanks & appreciation to **Prof. Linda Bobroff , and Mr. Ataulhaq Bashari** *for their very informative research articles and contribution to this May 2025 BNHC E-Magazine edition. We look forward to receiving their invaluable contribution in the future and wish them all much success in their future endeavors.*

Message: from the President of BioNatural Healing College (BNHC)

Greetings!

We are delighted to welcome you to the May 2025 edition of the BioNatural Healing College (BNHC) E-Magazine. It is with immense gratitude to the Almighty God that I take this opportunity to introduce this publication to our esteemed readers. I extend my heartfelt appreciation to all contributors, including our dedicated researchers and cherished readers, for their invaluable feedback and unwavering support.

This magazine is designed as an educational resource, offering insights and perspectives contributed by experts from around the globe. Please note that the content is intended solely for informational purposes, and the views expressed are those of the authors, independent of any affiliation with BNHC.

We hope this edition serves as a valuable source of knowledge and inspiration, fostering the continuous journey of learning and sharing wisdom across the seasons of life. On behalf of the BNHC team, I wish you all the best in health, happiness, and prosperity.

Warmest regards,

Dr. Nadir Sidiqi, Ph.D.

BioNatural Healing College

BioNatural Healing College Stands on Seven Core Pillar Foundations as follows:

1. All living organisms are made from the water this beautiful connection, connects us to praise the Creator of Creation for the provision of feeding, fueling, and healing to humanity.
2. No harm to public health and environmental health (Biodiversity) including pollinators, surface water, groundwater, soil, and air.
3. A series of complex chains involved with food production from the field to the mouth of the human body desperately needs scientific research to maximize healthy nutritionally food production and end malnutrition and food insecurity.
4. Harmful pests such as insects, and pathogens causing to human and plant health and loss of economic problems. BioNatural chemicals from plants, microorganisms, and ocean-living organisms exist and need further research to discover along with safety to utilize for the health improvement of humans as well as BioNatural Pest Management (insects, fungi, bacteria, various, nematodes, weeds, rodents, etc.).
5. Listen, love, appreciate, and respect with deep conscience and subconscious the connection between the genes of your body and beautifully ecologically in sense of feeling, feeding, fueling, and healing.
6. The brilliant human mind can irrigate with balance drinking clean water as a whole-body system to detoxify the toxicant from their body systems as well as to detoxify the soil, water, and environment from harmful chemicals, particularly pesticides through collaboration, and dedication from the individual, family, community, and scientific community locally and globally.
7. BioNatural Healing College provides a high-quality science base foundation through online education to fit and accommodate the needs of each prospective student for the sustainability and prosperity of his or her own, family, community, and humanity.

Nutrition for Health and Fitness: Sugar and Other Sweeteners:

By Prof. Linda Bobroff, Emeritus, Department of Family, Youth and Community Sciences, UF/IFAS Extension, Gainesville, Florida

Abstract: This publication provides information about sugars and other sweeteners in the American diet. It describes hidden sources of added sugars in foods to help those who want to reduce sugar intake find the added sugars in their diets. The section on high-intensity sweeteners looks at the characteristics of each approved sweetener, including aspartame, sucralose, and stevia.

Why the concern? Most people enjoy the sweet taste of sugar. In fact, very young infants smile when a drop of sugar water is put on their lips! However, sugars provide calories but none of the nutrients we need for good health. People who eat too many foods high in added sugars often consume more calories and fewer nutrients than they need. This can lead to obesity and a variety of health problems. There is strong evidence that most Americans would be healthier if they consumed fewer foods and beverages that contain added sugars. Let's see why excessive intake of added sugars is causing health problems for many Americans:

- Sugar is a source of "empty" calories. Eating or drinking excess calories can contribute to obesity and associated health problems.
- Foods and beverages high in added sugars often replace healthier foods and drinks in the diet. This can result in a nutrient-poor diet that does not support good health.
- Sugar contributes to tooth decay, a major public health problem in the United States, especially among low-income families. This publication provides information about sugars and other sweeteners in the American diet. It describes hidden sources of added sugars in foods to help those who want to reduce sugar intake find the added sugars in their diets. The section on high-intensity sweeteners looks at the characteristics of each approved sweetener.

What is sugar? Sugar is one type of carbohydrate. Carbohydrate is one of the nutrients that provide calories in our diets. The other calorie-containing nutrients are protein and fat. There are various types of sugars, all of which provide about four calories per gram, the same as other carbohydrates and protein. All sugars are nutritive sweeteners, meaning they are sweet and provide calories. Sweeteners that provide few or no calories and that we use as sugar substitutes are known as high-intensity sweeteners. **Nutritive Sweeteners:** The most common nutritive sweetener is table sugar, sucrose. Sucrose is a double sugar (disaccharide) made up of fructose and glucose, two simple sugars (monosaccharides). Fructose and glucose are found naturally in fruits and honey. Sucrose is also refined from sugar beets or sugarcane and is found in a wide variety of processed foods, some of which (e.g., salad dressings and ketchup) are not even sweet! Fructose is sweeter than other sugars and is used to sweeten many foods. Because it is so sweet, a smaller amount can be used, which adds fewer calories. However, fructose does not taste sweeter than other sugars in all foods and beverages, and it is more expensive than sucrose. Lactose, or milk sugar, is another disaccharide containing the monosaccharides glucose and galactose. Lactose provides a small percentage of the sugar intake in the American diet. As you can tell from the taste of milk, lactose is not a very sweet sugar. Another sugar found in a variety of foods is the disaccharide maltose, which consists of two glucose molecules. Maltose is used for brewing beer and is formed by yeast in bread making. Legumes (beans and lentils) and cereals contain small amounts of maltose.

Why We Eat Sugar Sugar? Syrups and other sweeteners are found in a variety of foods as added ingredients. Foods with added sugars include candy, pastries, pies, cakes, cookies, cereals, beverages, salad dressings, and many others. Health professionals are concerned about the added sugars in these foods and other "hidden" sources of sugars. Fruits, which contain naturally occurring sugars, are part of a healthful diet. They provide a variety of nutrients and fiber and are great choices for wholesome, sweet desserts or snacks. Milk contains the natural sugar lactose, which is a concern only for those unable to digest this sugar. Lactose-free milk is an option for those who are lactose-intolerant, and yogurt is often well tolerated. Added sugars play a versatile role in foods. They give food sweetness, a quality that many people enjoy. Besides improving the flavor of foods, sugars add texture and color to baked goods and help to thicken, firm, or preserve such foods as puddings, jams, and jellies. Eating these foods in moderation is fine, but many people consume much more added sugar than is healthy.

Table 1. Common sugar types.

Monosaccharides	Disaccharides
Glucose (Dextrose)	Maltose = Glucose + Glucose
Fructose	Sucrose = Glucose + Fructose
Galactose	Lactose = Glucose + Galactose

Table 2. Relative sweetness of sugars and other sweeteners (FDA 2015; Mahan & Escott-Stump 2008).

Advantame (sweetest)
Neotame
Sucralose
Saccharin
Stevia
Aspartame and acesulfame-K
Cyclamate (banned in the US)
Fructose
Luo Han Guo extract
Sucrose and xylitol
Glucose
Sorbitol and mannitol
Galactose and maltose
Lactose (least sweet)

How Much Sugar We Eat: In the United States, added sugars make up about 14% of calorie intake for people six years and older. This does not count natural forms of sugar in fruits and dairy products. Adults (but not children) with lower incomes tend to have higher intakes of added sugars, which may play a role in their higher rates of obesity (CDC 2019). The major sources of added sugars in the US diet are sugar-sweetened beverages (soft drinks, energy drinks, sports drinks, sweetened coffee and tea, alcoholic beverages, and flavored waters), providing almost half of total added sugars, and snacks and sweets (grain-based desserts, dairy desserts like ice cream, candy, jams, syrups, etc.), providing close to one-third of added sugars. The current Dietary Guidelines for Americans recommends a shift in eating patterns to reduce added sugar intake to less than 10% of calories (USDA 2020).

Sugars and Nutrition: You may wonder if raw sugar, honey, or agave nectar are more nutritious than other sugars. The answer is no. All of the following sweeteners are nutritionally the same; they contain calories along with no (or minimal) nutrients other than sugar (Duyff 2012). **Agave nectar:** a nutritive sweetener produced from the heart of the agave plant. The fresh juice is heated, converting the complex carbohydrates into simple sugars, mainly fructose and glucose. **Raw sugar:** coarse, granulated crystals formed from the evaporation of sugarcane juice. Raw sugar contains impurities and is not sold in stores. When the impurities and most of the molasses are removed, the sugar can be sold as turbinado sugar. **Molasses:** dark-colored syrup that is a by-product of sucrose production. It contains up to 70% sucrose. Molasses provides very small amounts of calcium and iron. **Brown sugar:** sucrose crystals covered with small but varying amounts of molasses. **Invert sugar:** a mixture of glucose and fructose formed by chemically splitting sucrose. Invert sugar prevents the crystallization of cane sugar in candy. **Confectioners' or powdered sugar:** finely ground sucrose crystals mixed with a small amount of cornstarch.

Honey: a sweetener containing fructose, glucose, maltose, and sucrose. It is made by bees and contains only trace amounts of vitamins and minerals. **Corn syrup:** a sweetener made from cornstarch and used in many commercially prepared foods. **High-fructose corn syrup (HFCS):** a sweetener made from cornstarch. An enzyme process slightly increases the fructose content, thus making HFCS sweeter than regular corn syrup. The glucose and fructose content of HFCS is similar to that of sucrose (table sugar).

Sugar and Your Health: Many people believe that sugar causes a variety of diseases, but there is no good evidence that sugar consumption alone is a significant factor in the development of heart disease, diabetes, hypoglycemia (low blood sugar), or hyperactivity. However, because eating a large amount of sugar can add many calories to the diet, it can contribute to the development of obesity, which is a risk factor for several other health problems. Depending on the amount of sugar consumed, the impact on total calories consumed will vary. Eating one pound of sugar per week would add over 1,800 calories per week, which would have a significant effect on calorie balance. For many people, cutting down on sugar intake is helpful in decreasing caloric intake. Along with decreasing consumption of foods high in fat and increasing exercise, reducing foods with added sugars can be a significant factor in controlling obesity.

Sugar in Modified Diets: Many people are concerned about their sugar intake because of medical conditions, such as diabetes, that may require them to modify their use of refined carbohydrates and sugars. Blood glucose levels are controlled in part by the action of insulin, a hormone produced by the pancreas. When the blood glucose level rises, as it does after eating, the pancreas is stimulated to produce insulin, which facilitates glucose uptake into the cells and a return to an appropriate blood glucose level. **Diabetes** is a disease in which there is an inadequate supply of insulin, or it does not work properly. In either case, persons with diabetes are unable to regulate their blood glucose levels, and they must manage their diabetes through lifestyle choices and the use of medications.

Balancing carbohydrate intake throughout the day is an important part of a healthful diet for people with diabetes. **Hypoglycemia** is a term meaning low blood glucose. It can be a symptom of various diseases. If you are worried that you may be hypoglycemic, consult your physician. Most people have relatively low blood glucose at certain times during the day. For example, our blood glucose may be lower than normal when we wake up in the morning. However, a nutritious breakfast supplies the carbohydrates needed to push the blood glucose level back to normal. When your blood glucose level is low, you may feel tired, weak, and hungry. To relieve these symptoms, eat foods containing some protein and fat along with a complex carbohydrate. Consuming simple sugars in foods such as candy or soft drinks causes a quick but short-lived elevation of blood glucose. This is not the healthiest way to satisfy your morning hunger pangs. Note that when the blood glucose of a person with diabetes becomes dangerously low, it is a medical emergency. This requires a rapid increase in blood glucose that only simple sugars can provide. Individuals with diabetes, especially those who take insulin or an oral medication that can cause hypoglycemia, must always carry a form of glucose with them to treat low blood glucose.

High-Intensity Sweeteners High-intensity sweeteners provide alternatives to sugars in a variety of foods and beverages. They are classified as nutritive or non-nutritive sweeteners, depending on whether they provide calories.
The one nutritive high-intensity sweetener currently on the market in the United States is aspartame, commonly known by its trade name, Nutrasweet®. The non-nutritive sweeten-ers approved in this country are advantame, neotame, sucralose, stevia glycosides (from the stevia plant), Luo Han Guo or monk fruit extract, saccharin, and acesulfame potassium (acesulfame K). Other non-nutritive sweeteners not currently approved in the United States include cycla-mate, whole leaf and crude stevia extract, neohesperidin, and thaumatin. One or more of these may someday be available in the United States (CDC 2016; Duyff 2012).

Aspartame is a widely used reduced-calorie sweetener approved for use in the United States. Although aspartame provides the same number of calories per gram as sugar, it is about 200 times sweeter than sucrose, so a very small amount is needed to sweeten foods. Its taste is similar to that of sucrose, and it does not have an aftertaste. Aspartame breaks down rapidly under high heat and is less stable in liquids than solid foods. Thus, taste problems may result when beverages are stored for long periods at high temperatures (e.g., keeping a case of diet soda in your hot garage). The Food and Drug Administration (FDA) approved aspartame in 1974 and then withdrew its approval when questions were raised about aspartame's safety. After a court hearing and a review of the toxicological studies performed, aspartame was again approved as safe for use in October 1981. When the FDA approved aspartame's use in carbonated beverages in 1983, some scientists and consumer groups raised concerns about the safety of aspartame's metabolites, which include phenylalanine, aspartic acid, methanol (wood alcohol), and diketopiperazine (DKP). Except for DKP, these substances are found naturally in a variety of foods or are formed in foods during cooking or processing. DKP was thoroughly tested, and no adverse effects were identified. In February 1984, the FDA asked the Centers for Disease Control and Prevention (CDC) in Atlanta to investigate consumer complaints related to aspartame consumption. The CDC concluded that some individuals may be unusually sensitive to aspartame-containing products but that there was no evidence of serious, widespread adverse health consequences related to the use of the sweetener. People with the inherited disease phenylketonuria (PKU) cannot metabolize phenylalanine, and their diets have to be controlled to avoid brain damage. Therefore, all products containing aspartame must be labeled with a warning to persons with PKU that the product contains phenylalanine.

Saccharin is a non-nutritive sweetener that is about 200 times sweeter than sucrose.

Until 1981, it was the only non-nutritive sweetener available in the United States after the ban on cyclamates in 1970. Although saccharin has been on the market since the early 1900s, it was under investigation by the FDA due to studies that indicated a link between saccharin consumption and bladder cancer in rats. As a result of the original study reported in the early 1970s, the FDA removed saccharin from its "Generally Recognized As Safe" (GRAS) (FDA 2017) list of food additives, and in 1977, the FDA proposed a ban on the use of saccharin. The public outcry that followed this proposal led the FDA to put a moratorium on the ban until additional research could be done. The moratorium was extended by Congress every two years until 1991. For years, foods and beverages that contained saccharin were required to have a warning label on the package. The Saccharin Notice Repeal Act eliminated this requirement in 1996. Saccharin is most familiar as the sweetener Sweet'N Low®, but more recently, it has been sold under the names Sweet Twin® and Necta Sweet®. **Acesulfame K (acesulfame potassium)** was approved for use in specific food and beverage categories by the FDA in July 1988 and as a general-purpose sweetener and flavor enhancer in foods in 2003. It is marketed as Sunette® and Sweet One®. Acesulfame K is not changed in the body and provides no calories or potassium. This sweetener can be used in cooking and baking because it does not break down at high temperatures. It is about 200 times sweeter than sugar. **Sucralose** is a popular high-intensity, non-nutritive sweetener because it pours and measures like sugar for baking. Sucralose is not metabolized in the body, so it contributes no calories when consumed.

In 1998, sucralose was approved as a tabletop sweetener; in 1999, it was further approved as a general-use sweetener. Sucralose is sold under the brand name Splenda®. Before approval, the FDA reviewed more than 110 studies to ensure safety in consumption. Sucralose is found in beverages, frozen desserts, gelatins, chewing gum, baked goods, and many more foods. **Advantame** is the most recently approved high-intensity non-nutritive sweetener, only receiving FDA approval in 2014, as a sweetener and general flavor enhancer in foods. Even though advantame itself is a derivative of aspartame, so little of this sweetener is used at one time that the FDA does not require a label warning about the presence of phenylalanine for persons with PKU. Advantame is 20,000 times sweeter than sucrose and is heat-stable. As of April 2020, advantame was not available for commercial sale under a brand name or in any food products in the United States (USDA n.d.). **Neotame** is sold under the brand name Newtame®. At 7,000 to 13,000 times sweeter than sugar, neotame was given FDA approval in 2002 as a high-intensity sweetener and a flavor enhancer in foods. It is partially absorbed by the small intestine and rapidly metabolized before being fully excreted from the body. Like advantame, neotame contains phenylalanine in such a small concentration that the amount released in the body is negligible. Neotame does not change structure in high heat, which makes this product appropriate for baking.**Stevia glycosides:** are high-intensity, non-nutritive sweeteners made from the Stevia rebaudiana Bertoni plant, more commonly known as stevia. In 1998, the FDA approved stevia glycosides for use as a food additive that is generally recognized as safe (GRAS). Products on the GRAS list are food additives that have met a standard of safety set by the FDA with a "reasonable certainty of no harm" in use. GRAS substances undergo a premarket review, as do other food additives, but the evaluation is done by experts who examine the product's safety with publicly available scientific data. For a food substance (such as saccharin) that was GRAS certified before 1958, its use is considered safe "through experience based on common use in food" (FDA 2019). Stevia glycosides from the Stevia rebaudiana Bertoni plant are now approved as food sweeteners. Currently, purified rebaudioside A and stevioside are approved under the GRAS certification.

Whole stevia leaves are not approved as a non-nutritive sweetener, but they may be sold as a dietary supplement. Stevia is shelf-stable in dry form and more stable than acesulfame K and aspartame in liquid form. **Luo Han Guo extract** is another GRAS product approved by the FDA in 2009. It is the common name for the compound Siraitia grosvenorii or Swingle fruit extract. The sweetness level varies from 150 to 300 times sweeter than sugar, depending on the glycosides used. A commonly recognized name for this product is monk fruit, which has been used for centuries in China. Luo Han Guo extract is known to have an aftertaste at high levels. **Cyclamate** is a non-nutritive sweetener that is about 30 times sweeter than sucrose. It was a popular sweetener in carbonated beverages in the United States in the 1960s, often combined with saccharin. Cyclamate was banned in the United States in 1970 because rat studies implicated it as a carcinogen (a cancer-causing agent). The validity of the data has been questioned since then, but cyclamate remains unavailable in this country. However, it currently is marketed in some 40 countries, including Canada. In 1984, the FDA's Cancer Assessment Committee reported that the evidence indicated that cyclamate is not carcinogenic. The National Research Council of the National Academy of Sciences stated in 1985 that cyclamate is not carcinogenic and indicated that further research is not necessary. **Intake of Non-nutritive Sweeteners and Health** Studies comparing the health outcomes of healthy adults or children with lower non-nutritive sweetener intake compared to those with higher non-nutritive sweetener intake were evaluated in a recent review of studies (Toews et al. 2019). The limited number of small intervention studies in adults showed a small reduction of body mass index (a measure associated with body fatness) and fasting blood glucose in individuals consuming non-nutritive sweeteners but not in individuals consuming sucrose. Although several of the studies with shorter duration did not find a significant reduction in the energy intake in adults receiving non-nutritive sweeteners compared to sugar (Reid, Hammersley, and Duffy 2010, Reid et al. 2013, Reid et al. 2007), a longer 10-week study showed a lower energy intake in those consuming non-nutritive sweeteners (Raben et al. 2001). This may be due to daily sugar intake being lower in those who consume non-nutritive sweeteners (Raben et al. 2001, Reid, Hammersley, and Duffy 2010, Reid et al. 2013).

In children, a smaller increase in body mass index was observed with non-nutritive sweetener intake compared to sugar (Toews et al. 2019). Non-nutritive sweetener intake does not seem to improve most health outcomes, including blood insulin levels, insulin resistance, pancreatic function, oral health, cancer, cardiovascular disease, chronic kidney disease, asthma, allergies, mood, or brain health. However, of the few studies identified for each health outcome, most were of short duration, had few study participants, and had other limitations. More research is needed to determine if there are relationships between intake of non-nutritive sweetener intake and health. Of recent interest is the potential relationships between non-nutritive sweetener intake, gut microbiota, and health. Given their high-intensity sweetness, most non-nutritive sweetener are consumed in very low quantities. They are absorbed in the small intestine and do not exert any direct effects on the gut microbiota, which is in greatest abundance in the colon (Ruiz-Ojeda et al. 2019). **What Food Labels Reveal:** The new food label, approved by the FDA in 2016, provides the amount of total sugar and added sugar in the product. This helps consumers distinguish between natural and added sugar. Make a habit of reading the ingredient list, which lists specific sugars as ingredients. If one of the terms meaning sugar is listed first or second in the ingredient list, then you know that sugar is one of the main ingredients by weight (see the example ingredient list below). The -ose suffix indicates that the substance is a sugar. Keep in mind that not all sugars have a name ending in -ose. Sugars are ingredients in all sweet foods, but they are also found in other foods, including meat and poultry coating mixes, non-dairy coffee creamers, and salad dressings, among many other prepared foods and ingredients. Nutritive sweeteners in foods may be listed on the label as corn sweetener or natural sweetener. A natural sweetener could be honey, molasses, or date sugar. **Example: Breakfast Drink Ingredient List:** INGREDIENTS: Nonfat dry milk, sugar*, cocoa, sweet dairy whey, corn syrup solids*, calcium caseinate, lactose*, isolated soy protein, sodium caseinate, lecithin, magnesium

hydroxide, carrageenan, artificial vanilla flavor, sodium ascorbate, ferric orthophosphate, vitamin E acetate, vitamin A palmitate, niacinamide, copper gluconate, zinc oxide, calcium pantothenate, thiamine mononitrate, pyridoxine hydrochloride, folic acid. *Sugar source. **Breaking the Sugar Habit:** Once a person develops an eating habit or a desire for a food, it may be difficult to change that desire. One way to reduce sugar intake is to gradually develop a taste for foods free from or low in added sugars. For example, learn to enjoy the taste of unsweetened fresh fruits. Gradually decrease the sugar you add to tea and coffee, and select packaged foods and beverages, such as breakfast cereals, salad dressings, and fruit juices, that contain less added sugar. The same holds true for sugar added when preparing and cooking foods. If you stop adding sugar to coleslaw, applesauce, and cooked vegetables, you may like their natural flavors. In time, you and your family may find you can eliminate most of the added sugar from your diet. Here are a few suggestions to make you more aware of your sugar consumption habits and to help you break them:

• Become aware of the sweet foods you eat. For the next several days, write down what you eat and put a check mark next to sweet foods. Also, notice when and why you eat these sweet foods. Do you eat sweets out of boredom? Aim to decrease consumption of sweet foods and select more nutrient-rich choices.

• Make a list of foods you can substitute for sweets. For example, rather than soft drinks, you might drink milk, 100% fruit juice, water, or unsweetened tea (iced, with lemon); instead of pie, cookies, or sweet rolls, try whole-grain bread, fruit, or low-fat cheese slices; and instead of candy, snack on fruit or vegetable wedges.

• Search your existing recipe files and cookbooks. Many recipes use very little sugar and others can easily be modified. In many recipes, you can decrease the amount of sugar by one-third without significantly affecting the taste or texture of the product.

- Read labels to estimate sugar content. Besides sugar, look for the words dextrose, maltose, sucrose, fructose, honey, corn sweetener, and corn syrup—they all mean sugar. The product has a high sugar content if these appear in the first three ingredients. Also, if several of these different ingredients appear elsewhere in the listing, realize that if you add them all up, sugar might turn out to be the main ingredient (see Table 3).
- Buy fewer foods with a high sugar content. They won't be eaten as often if they aren't in your cupboards or refrigerator.
- Substitute wholesome foods for some of the high-sugar foods you normally eat. Make sure you include a variety of foods from the five food groups daily.
- Avoid poor substitutes. Don't replace the sugar with high-fat foods or alcoholic beverages. **Good Taste with Less Sugar:** There are many ways to reduce the amount of sugar eaten without giving up the taste you like. Be creative and experiment. Here are 28 tasty ideas to get you started: **Beverages**
- Substitute 100% fruit juice mixed with club soda for soft drinks, fruit juice cocktails, punches, and other drinks containing large amounts of sugar.
- Try unsweetened tea with a twist of lemon or a sprig of fresh mint.
- Enjoy water, mineral water, or club soda with a slice of fresh lime or lemon.
- Reduce consumption of soft drinks containing sugar; instead, choose 100% fruit juices (in small amounts), unsweetened iced tea, buttermilk, and low-fat milk.
- Add a stick of cinnamon or an orange slice to unsweetened coffee. **Milk and Dairy Products:**
- Substitute plain yogurt for fruit-flavored yogurt, and add your own fresh fruit and a dash of cinnamon or nutmeg for flavor.
- Choose plain milk over chocolate milk, which has more sugar.

Breads, Cereals, and Baked Goods:

• Eat fewer cookies, pies, and cakes. When you do have them, substitute graham crackers for other types of cookies, fruit pies for other types of pies, and plain cake with fruit toppings for frosted cakes. Eat small servings.

• Add fresh fruit or raisins to plain, ready-to-eat breakfast cereals instead of sugar.

• Make cakes without frosting or frost only the top.

• Use yeast bread instead of sweet bread for the holidays. There is a variety to choose from, and they use less sugar than traditional holiday breads.

• Experiment with recipes. Gradually decrease by one-quarter to one-third the amount of sugar called for in baked items until you obtain an acceptable product. Bring out the flavor of the sweeteners with vanilla, lemon, or almond extract.

• Use fresh fruit toppings or unsweetened applesauce for pancakes, waffles, and French toast instead of syrup or honey.

Protein Foods and Main Dishes

• Leave out the sugar in stir-fried dishes. It's doubtful you'll even notice the difference.

• Make your own breading and coating mixes for meat and poultry. Some commercially prepared ones contain more than 50% sugar.

• Grind your own peanut butter (many grocery stores have machines for this) or look for peanut butter without added sugar.

Fruits

• Select fresh fruits, fruits canned in their own juice, or fruits canned in "lite" or "extra lite" syrup rather than heavy syrup.

• Use fruits rather than sugar to sweeten foods. Pineapple, raisins, bananas, oranges, and unsweetened fruit juices can be used in some vegetable and main dishes, as well as in desserts.

• Enjoy fresh fruit in season as a staple in your diet.

Vegetables

• Don't add sugar to vegetables when cooking. For extra flavor, try herbs and spices, or in some cases, fruits and 100% fruit juices.

• Read labels on frozen vegetables packaged in sauces or specialty packs. Many of these contain added sugar. Read labels on canned vegetables as well. **Snacks**

• Choose popcorn, raw vegetables, and fresh fruits instead of candy and other sweet snacks. Make these healthy foods easy to find and eat. Prepare them ahead of time and store in the refrigerator in an airtight plastic container labeled "snack foods."

• Make your own dips. Commercially prepared ones often contain sugar. Use raw vegetables as dippers in place of snack crackers, which often contain sugar as well. **Condiments**

• Try making your own salad dressing. Many commercial dressings, both bottled and packaged mixes, contain a large amount of sugar.

• Try cardamom, coriander, basil, nutmeg, cinnamon, and ginger for a light, sweet taste.

• Read labels on bottled sauces and packaged seasoning mixes. You can easily make a similar version at home without the added sugar. **Desserts**

• Get in the habit of serving fresh or simply prepared fruits for dessert. A fruit compote in orange juice, ambrosia, broiled grapefruit, or banana with cinnamon makes a tasty treat.

• Limit the frequency of sweet foods eaten. Eating two cookies at dinner will be less harmful to your teeth than one eaten in the afternoon and the other in the evening.

For more information, contact your local UF/IFAS Exten-sion family and consumer sciences agent. You can also find your local UF/IFAS Extension office online https://sfyl.ifas.ufl.edu/find-your-local-office/

References

Centers for Disease Control and Prevention (CDC). 2019. "Get the Facts: Added Sugars." Accessed June 27, 2023. https://www.cdc.gov/nutrition/php/data-research/added-sugars.html?CDC_AAref_Val=https://www.cdc.gov/nutrition/data-statistics/added-sugars.html

Duyff, R. L. 2012. American Dietetic Association Complete Food & Nutrition Guide, 4 Edition. New York: Houghton Mifflin Harcourt Publishing Company. 55–87.

U.S. Food and Drug Administration (FDA). 2018. "As-partame and Other Sweeteners in Food." Accessed May 8, 2024. https://www.fda.gov/food/food-additives-petitions/aspartame-and-other-sweeteners-food

U.S. Food and Drug Administration (FDA). 2019. "Generally Recognized as Safe (GRAS)." Accessed May 8, 2024. https://www.fda.gov/Food/IngredientsPackagingLabeling/GRAS/default.htm

Mahan, L. K., and S. Escott-Stump. 2008. Krause's Food & Nutrition Therapy, 12 Edition. St. Louis, MO: Saunders Elsevier. 43.

Raben, A., A. C. Møller, T. H. Vasilaras, and A. Astrup. 2001. "A Randomized 10 Week Trial of Sucrose vs Artificial Sweeteners on Body Weight and Blood Pressure After 10 Weeks." Obesity Research 9:86s.

Reid, M., R. Hammersley, and M. Duffy. 2010. "Effects of Sucrose Drinks on Macronutrient Intake, Body Weight, and Mood State in Overweight Women over 4 Weeks." Appetite55 (1): 130–136. https://doi.org/10.1016/j.appet.2010.05.001

Reid, M., R. Hammersley, M. Duffy, and C. Ballantyne. 2013. "Effects on Obese Women of the Sugar Sucrose Added to the Diet over 28 D: A Quasi-Randomised, Single-Blind, Controlled Trial." British Journal of Nutrition 111 (3): 563–570. https://doi.org/10.1017/S0007114513002687

Reid, M., R. Hammersley, A. J. Hill, and P. Skidmore. 2007. "Long-Term Dietary Compensation for Added Sugar: Effects of Supplementary Sucrose Drinks over A 4-Week Period." British Journal of Nutrition 97 (1): 193–203. https://doi.org/10.1017/S0007114507252705

Ruiz-Ojeda, F. J., J. Plaza-Diaz, M. J. Saez-Lara, and A. Gil. 2019. "Effects of Sweeteners on the Gut Microbiota: A Review of Experimental Studies and Clinical Trials." Advances in Nutrition 10 (suppl_1): S31–S48. https://doi.org/10.1093/advances/nmy037

Toews, I., S. Lohner, D. Küllenberg de Gaudry, H. Sommer, and J. J. Meerpohl. 2019. "Association between Intake of Non-sugar Sweeteners and Health Outcomes: Systematic Review and Meta-analyses of Randomised and Non-randomised Controlled Trials and Observational Studies." BMJ 364:k4718. https://doi.org/10.1136/bmj.k4718

U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Ameri-cans, 2020-2025. 9th Edition. December 2020. Available at https://www.dietaryguidelines.gov

U.S. Department of Agriculture (USDA). n.d. "FoodData Central" Accessed April 15, 2020. https://fdc.nal.usda.gov/index.html

Climate Change: Its Impact on Food Security

By Ataulhaq Bashari MS Student in BioNatural Health Sciences at BioNatural Healing College (BNHC)

Abstract: Climate change poses one of the greatest threats to food security worldwide. Rising temperatures, unpredictable weather patterns, increased frequency of natural disasters, and sea level rise affect agricultural productivity, food distribution systems, and nutritional quality. This paper explores the mechanisms by which climate change impacts food security and discusses possible strategies for mitigation and adaptation.

Introduction: Food security exists when all people, at all times, have access to sufficient, safe, and nutritious food to meet their dietary needs for an active and healthy life. Climate change, characterized by shifts in temperature, precipitation patterns, and extreme weather events, threatens all four pillars of food security: availability, access, utilization, and stability. Understanding these impacts is crucial for developing strategies to ensure a stable food supply for a growing global population. **1. How Climate Change Affects Food Availability**

Crop Yields: Higher temperatures, droughts, and floods decrease crop yields. For example, staple crops like wheat, rice, and maize are sensitive to temperature rises beyond 2°C above pre-industrial levels. In Africa and South Asia, yield losses could reach up to 30% by 2050 (FAO, 2022). **Livestock Production:** Heat stress and changing grazing patterns reduce livestock productivity. Livestock diseases may also increase due to warmer climates**. Fisheries:** Warming oceans and ocean acidification threaten fish stocks, disrupting marine food supplies, especially for coastal communities.

2. How Climate Change Affects Food Access: Economic Barriers: Climate-induced declines in production drive up food prices, making food less affordable, especially for vulnerable populations. **Infrastructure Disruptions:** Floods, hurricanes, and wildfires damage transportation systems, cutting off rural communities from food markets. **Displacement:** Climate change forces migration from rural agricultural areas, increasing competition for food in urban settings. **3. How Climate Change Affects Food Utilization: Nutrition:** Heat and CO_2 concentrations can lower crops' nutritional value, reducing levels of essential nutrients like protein, iron, and zinc. **Water Scarcity:** Water scarcity affects hygiene and food safety, leading to higher risks of foodborne illnesses. **Health Impacts:** Malnutrition and hunger are exacerbated in regions severely impacted by climate change, weakening immune systems and increasing disease burden. **4. How Climate Change Affects Food Stability: Seasonal Variability:** Erratic weather patterns lead to unpredictable harvests, reducing the consistency of food supplies. **Natural Disasters:** Frequent disasters such as droughts, floods, and storms destabilize food production and distribution networks. **Conflict:** Competition for shrinking resources can trigger conflicts, further jeopardizing food security. **5. Strategies for Mitigation and Adaptation**: **Climate-Resilient Crops:** Developing drought-tolerant, flood-resistant, and heat-tolerant crop varieties can help stabilize yields. **Sustainable Agriculture:** Practices such as agroforestry, conservation tillage, and integrated pest management reduce agriculture's carbon footprint while boosting resilience. **Early Warning Systems:** Investing in climate prediction models and early warning systems helps farmers prepare for extreme weather. **Policy and Investment:** Governments and international organizations must prioritize investment in rural infrastructure, research, and farmer education. **Global Cooperation:** Tackling climate change and food insecurity requires coordinated global action through agreements like the Paris Climate Accord. **Conclusion:** Climate change has far-reaching impacts on food security, threatening the basic right to sufficient and nutritious food for millions worldwide. Immediate action is necessary to adapt agricultural systems, support vulnerable communities, and mitigate the root causes of climate change. Sustainable development strategies must be prioritized to ensure a secure food future for coming generations.

References

1. Vermilion, S. J., Campbell, B. M., & Ingram, J. S. (2012). Climate Change and Food Systems. Annual Review of Environment and Resources, 37, 195-222.

2. FAO. (2022). The State of Food Security and Nutrition in the World. Food and Agriculture Organization of the United Nations.

3. IPCC. (2021). Climate Change 2021: The Physical Science Basis. Intergovernmental Panel on Climate Change.

4. Wheeler, T., & von Braun, J. (2013). Climate Change Impacts on Global Food Security. Science, 341(6145), 508-513.

Short Biography

Dr. Bera Dordoni, N.D. "The Wellness Whisperer"
With over 35 years of serving as a vegan/vegetarian-oriented Naturopathic Doctor/nutritionist, Dr. Bera, now focuses primarily on teaching Ho'oponopono in workshops and at retreats in her home in the Zuni mountains. She provides gourmet vegan meals and a relaxing stay where deer and wild turkeys play… as well as instruction in plant-based living, immune-system building, and how to make the laws of attraction work for you. To learn more or book your stay, visit drberatlc.com or bastis.org, or call (505) 783-9001. BioNatural Healing College (BNHC) is delighted to have Dr. Bera Dordoni as a faculty member.

BIONATURAL HEALING COLLEGE (BNHC)

PLEASED TO ANNOUNCE

OFFERS APPROVED 7 HOURS CONTINUING EDUCATION: IN-PERSON SEMINARS FOR THE STATE OF CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION.

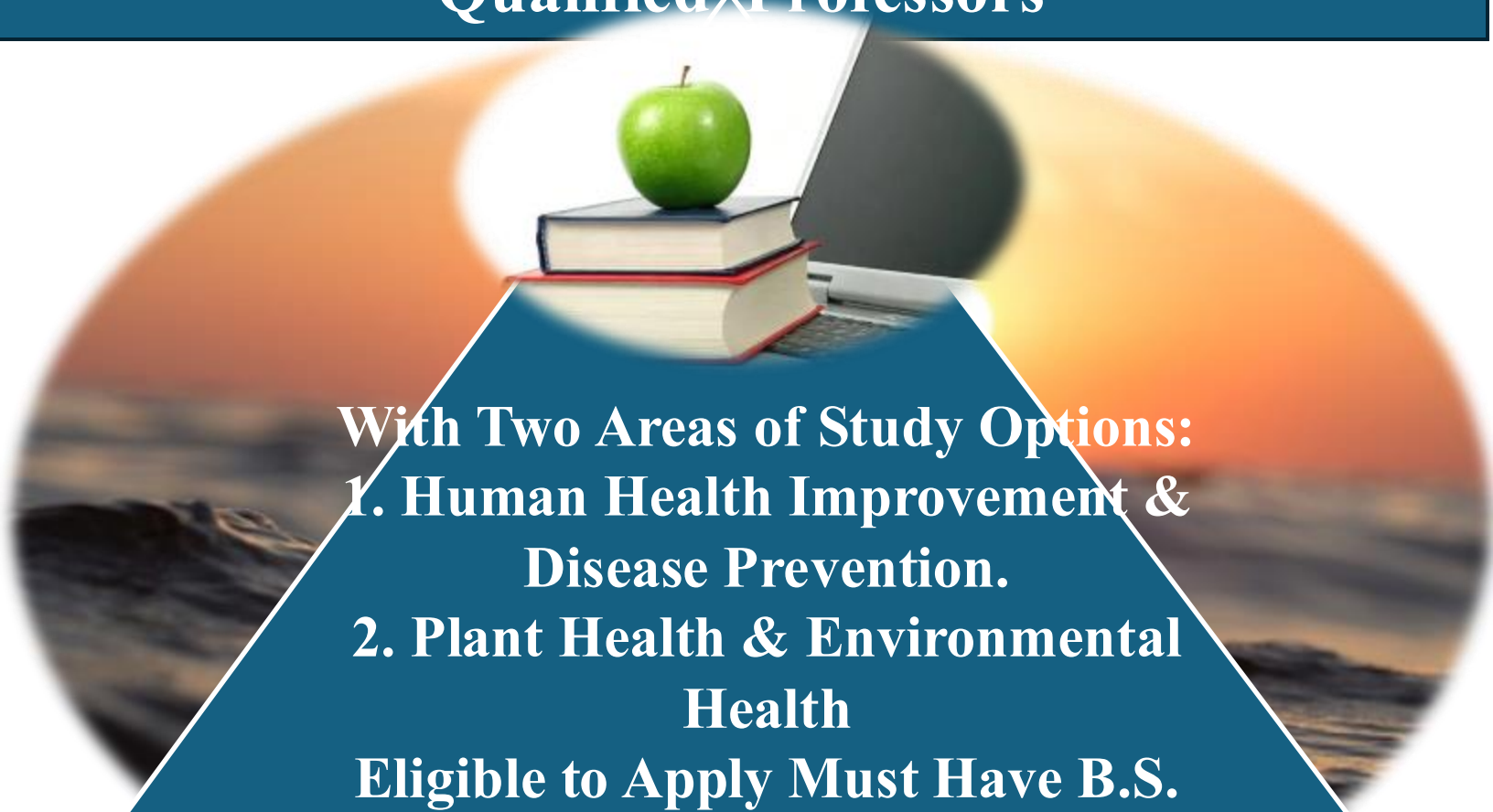
DATES: 5/20/25, 6/17/25, 7/22/25, 8/19/25, 9/23/25, 10/21/25, 11/18/25, 12/12/25

LOCATION: POMONA, CALIFORNIA

- **PLEASE CALL FOR REGISTRATION, LOCAL CA DPR LICENSE**

BioNatural Healing College

ONLINE EDUCATION (BNHC)
Offers Master's Degree in BioNatural Health Sciences Under Highly Qualified Professors



With Two Areas of Study Options:

1. Human Health Improvement & Disease Prevention.

2. Plant Health & Environmental Health

Eligible to Apply Must Have B.S. Degree

It is convenient to start at any time from your comfort zone.

Reasonable tuition fee with option plans available.

FOR MORE INFORMATION PLEASE CONTACT US:

PH: 909-242-6342 OR AT Email:

info@bionaturalhealingcollege.org

BioNatural Healing College

ONLINE EDUCATION
Under Highly Qualified Professors

BNHC Offers 4 Diplomas Online

1. Herbal Science & Master Herbalist
2. BioNatural Pest Management
3. Plant-Based Nutrition 4. Nutrition & Brain Function Consultant

Convenient to start at any time from your comfort z

Reasonable tuition fee with option plans *available*

FOR MORE INFORMATION PLEASE CONTACT US:

PH: 909-242-6342 OR AT Email:

info@bionaturalhealingcollege.org

Mission: BioNatural Healing College (BNHC) is a non-profit public benefit institution that has tax-exempt status under the Internal Revenue Service, Section 501(c)(3) of the United States of America. Our goal is to offer a high-quality education a diploma program as well as holistic health and nutrition conferences, seminars, workshops, and continuing education. The focus of these educational programs is to offer healing and holistic nutrition science through online distance learning. These dynamic online education programs will provide diverse adult learners throughout the world the experience of enhancing their quality of life, their health, and their happiness.

Vision: The faculty, staff, and management team of BioNatural Healing College (BNHC) are passionately committed to providing the best teaching possible in this field. We seek to encourage, motivate, and explain the importance of this field to prospective students so that they may make an informed decision regarding enrollment. We seek an ultimate goal of satisfaction for the student based on responsibility, commitment, respect, awareness, and sustainable education for society.

Accreditation and Recognition: BioNatural Healing College (BNHC), based in California, is dedicated to providing high-quality online education, and vocational online distance learning to students worldwide. As a legally recognized institution, it is authorized to operate by the State of California's Bureau for Private Postsecondary Education, by the established educational code. While BioNatural Healing College is not accredited by the United States Department of Education, BNHC is a member of the Agronomy Society of America, Crop Science Society of America, Soil Science Society of America and American Holistic Health Association (AHHA), reflecting its commitment to a holistic and ecological approach to human health and environmental health improvement education.