

# The reVITALIZER HOUR #1

with Dr. William Summers

(CALL-in, 505 -444- 5059) SAT February 10, 2024.

Quotes & Quips

HUMOR & WISDOM

TOPICS:

● They claim red meat is bad for you. But I never saw a sick-looking tiger.” Chi Chi Rodriguez

● NEVER let your sense of Morals prevent you from doing what is RIGHT.” – Isaac Asimov

● The more you KNOW, the mor you know you DO NOT KNOW. – Aristotle

● If you don't read the newspaper, you are uninformed. If you do read the newspaper, you are mis-informed. – Mark Twain

● DO NOT complain about growing old. It is a privilege denied to many. – Mark Twain

■ *“DEMOCRACY: When the People find that they can vote themselves money, that will herald the end of the republic”*

– Benjamin Franklin

*IN THESE TROUBLED TIMES REMEMBER, FEAR IS  
A REACTION.. .... COURAGE IS A DECISION.*

**THE PURPOSE OF THIS SHOW IS TO  
EDUCATE AND EMPOWER YOU  
THE LISTENER**

**I MAKE THE COMPLEX UNDERSTANDABLE EACH &  
EVERY SHOW. -R. Limbaugh**

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## COVID19 REPORT:

Moderna Scientists Warn mRNA Vaccines Carry Toxicity Risks. Certain techniques should be used to reduce the risks, scientists say.

– Epoch Times Feb 4, 2024 by Zachary Stieber

The technology used in Moderna’s COVID-19 vaccine carries toxicity risks, scientists with the company said in a new paper.

“A major challenge now is how to efficiently de-risk potential toxicities associated with mRNA technology,” the scientists wrote in the paper, which was published by Nature Reviews Drug Discovery on Jan. 23.

he mRNA vaccines have multiple known side effects, including heart inflammation and severe allergic shock. Those may stem from hypersensitivity reactions, which can be elicited by “any LNP-mRNA component” but are most likely triggered by PEGlyated lipid nanoparticles, which is “the most potentially reactogenic component,” according to the scientists.

Polyethylene glycol, or PEG, an ingredient in the Pfizer and Moderna COVID-19 vaccines, is known to cause allergic reactions. Outside scientists are divided over the mechanism behind the heart inflammation, while Pfizer has posited that the LNPs are behind the issue.

The new paper drew from prior publications and other data. The authors didn’t carry out any new experiments.

The scientists later noted that reducing risks of toxicities with mRNA-based vaccines and drugs is necessary but “complicated.” That can be accomplished through a multipronged approach that includes advanced testing in laboratories and adjusts preclinical, animal trials to better account for “differences in human and animal physiology.”

“Thanks to the mRNA platform we built, we have an exciting pipeline, with up to 15 launches in the next five years,” Stephane Bancel, Moderna’s CEO, told investors in the company’s most recent earnings call.

==> Dr. Robert Malone, who helped invent the mRNA technology, said the paper downplayed the range of risks that have been linked to the mRNA-based vaccines and may be part of a limited hangout, or a propaganda technique. That technique, a form of misdirection, involves people offering some information to obscure or prevent the discovery of other information.

“My most generous interpretation of the overall intent of the article is that this article summarizes and represents information concerning risks and toxicities of this platform technology which Moderna wishes to have disclosed in a manner which puts the firm, its activities and the underlying platform technology in the best possible light,” Dr. Malone, who wasn’t involved with the paper, wrote in his review.

“A less generous interpretation of intent is that this article represents a subtle form of propaganda strategy commonly referred to as a limited hangout.”

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## **END TIMES Report:**

### **ROOT CELLAR WITH TRASH CAN:**

Root Cellar = a structure, usually underground or partially underground, used for storage of vegetables, fruits, nuts, or other foods. Root cellars are for keeping food supplies at controlled temperatures and steady humidity.

Vegetables stored in the root cellar primarily consist of mostly root vegetables (thus the name) - potatoes, turnips, and carrots. Other food supplies placed in the root cellar during winter include beets, onions, jarred preserves and jams, salt meat, salt turbot, salt herring, winter squash, and cabbage.

You can create a root cellar with minimal effort.– out of a trash can  
With a little bit of elbow grease, you will have a functioning root cellar in no time.

#### INGREDIENTS

- Trash can or steel drum. Galvanized or stainless steel will work best.
- Plastic sheeting: GIVES your drum has the longest possible lifespan. It will also help to keep pests out.
- Rocks or cinder blocks: optional. HELP to create a raised shoulder, ensuring that runoff water does not enter your drum.
- Corrugated sheet or other covering: eg) old pieces of shade net.
- Shovel for digging the hole and a wheelbarrow to move rocks or cinder blocks. Maybe an axe to deal with stubborn tree roots.

#### RECIPE:

1. Identify Site: I recommend finding a spot that never gets direct sun. Soft ground will help to dig the hole quickly. Do not select a low-lying area, as heavy rain could cause a temporary dam or large puddle to submerge your drum.
2. Place your trash can: Mark the outermost circumference of the drum and clean weeds for approximately 1-foot width. Then start digging the hole.

You want your trash can's top 6 to 12 inches above the soil line. Create a shoulder to ensure the trash can is entirely isolated, but raising the lid will ensure that your trash can does not become submerged.

●Measure the depth needed on the shovel's handle. So YOU can keep track as you proceed.

3. Cover in plastic and put in the hole: I used an old paint drop sheet as a "tube" into which the drum goes. I then place it inside the hole.

I cover the entire top of the drum, as this help to ensure that dirt doesn't end up in the drum.

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HISTORY YOU ARE NOT SUPPOSE TO KNOW:

HOW DRUG ADS CAME INTO Existence in the 1880s

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street), Village Apothecary in cedar Crest, **HIGHLAND**

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FROM THE LISTENER:

## **GMO'S**

genetically modified organism (GMO) Genetic modification can include the introduction of new genes or enhancing, altering, or knocking out endogenous genes. In some genetic modifications, genes are transferred within the same species, across species (creating transgenic organisms), and even across kingdoms.

Creating a genetically modified organism is a multi-step process. Genetic engineers must isolate the gene they wish to insert into the host organism and combine it with other genetic elements, including a promoter and terminator region and often a selectable marker. A number of techniques are available for inserting the isolated gene into the host genome. Recent advancements using genome editing techniques, notably CRISPR, have made the production of GMOs much simpler. Herbert Boyer and Stanley Cohen made the first genetically modified organism in 1973, a bacterium resistant to the antibiotic kanamycin. The first genetically modified animal, a mouse, was created in 1974 by Rudolf Jaenisch, and the first plant was produced in 1983. In 1994, the Flavr Savr tomato was released, the first commercialized genetically modified food. The first genetically modified animal to be commercialized was the GloFish (2003) and the first genetically modified animal to be approved for food use was the AquAdvantage salmon in 2015.

GMO seeds are used to plant over 90% of all maize (corn), cotton, and soy grown in the United States, which means that many of the foods you eat likely contain GMOs.

In the food industry, GMO crops have had genes added to them for various reasons Trusted Source, such as improving:

- their growth
- nutritional content
- sustainability
- pest resistance
- ease of farming

**the Food and Drug Administration (FDA), Environmental Protection Agency (EPA), and USDA Trusted Source maintain that GMOs are safe for human and animal consumption.**

GMO foods may **OFFER ADVANTAGES** to the grower and consumer. These can include:

**PEST CONTROL:** Many GMO crops have been genetically modified to express a gene that protects them against pests and insects. The Bt gene is commonly genetically engineered into crops like corn, cotton, and soybeans. It comes from a naturally occurring bacteria known as *Bacillus thuringiensis*. This gene produces a toxic protein to several pests and insects, which gives the GMO plants a natural resistance. As such, GMO crops don't need Trusted Source to be exposed to harmful pesticides as often.

**FEWER PESTICIDES:** A 2020 study notes that GMO technology has reduced global chemical pesticide use by 8.3% Trusted Source and indirectly reduced greenhouse gas emissions because farmers don't need to spray their fields as often.

**IMPROVED SURVIVAL AND GREATER YIELD:** Other GMO crops have been modified with genes that help them survive stressful conditions, such as droughts Trusted Source, and resist diseases like blight Trusted Source, resulting in a higher yield for farmers.

**Increased nutritional value:** Genetic modification can increase the nutritional value of foods. For example, rice high in beta carotene, also called golden rice, was developed Trusted Source to help prevent blindness in regions where local diets are chronically deficient in vitamin A.

**ENHANCED FLAVOR:** Genetic modification can enhance Trusted Source the flavor and appearance of foods, such as the non-browning apple.

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GMO crops grown and sold in the United States Trusted Source include:

corn	soybean	canola
sugar beet	alfalfa	cotton
potatoes	papaya	pink pineapple
summer squash	a few apple varieties	

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**CONCERNS AROUND GMO** consumption include:

**ALLERGIES:** Because GMO foods contain foreign genes, some people worry that they harbor genes from foods that may prompt an allergic reaction. According to the FDA Trusted Source, researchers who develop GMO foods run tests to ensure that allergens aren't transferred from one food to another. Research suggests GMO foods are no likelier to trigger allergies than their non-GMO counterparts.

**CANCER:** Because cancers are caused by DNA mutations, some people fear that eating foods with added genes may affect your DNA. The American Cancer Society (ACS) Trusted Source has stated that there's no evidence to link GMO food intake to an increased or decreased risk of cancer, and there is no evidence that eating GMOs will change your DNA. However, more long-term human research is still needed.

**Herbicide use:** Most GMO crops are resistant to herbicides, such as Roundup, so farmers may use herbicides to kill surrounding weeds without damage to their crops. But Roundup and its active ingredient glyphosate are subject to controversy because animal and test-tube studies have linked them to various diseases. There is new evidence that glyphosate exposure may increase the relative risk of non-Hodgkins lymphoma by 41% Trusted Source.

Honeybees: There has also been concern that pollen from Bt crops may negatively impact Trusted Source honeybees, but there doesn't seem to be any solid evidence to support this yet.

#### SUMMARY

The main concerns around GMOs involve allergies, cancer, and environmental issues — all of which may affect the consumer. While current research suggests few risks, more long-term research is needed.

no food labeled “100% organic” contains any GMO ingredients because U.S. law prohibits this. However, if a product is simply labeled “organic,” it may contain some GMOs.

“I now believe, as a much more experienced scientist, that GMO crops still run far ahead of our understanding of their risks. In broad outline, the reasons I believe so are quite simple. As a biologist I have become much more appreciative of the complexity of biological organisms and their capacity for benefits and harms, and as a scientist I have become much

more humble about the capacity of science to do more than scratch the surface in its understanding of the deep complexity and diversity of the natural world. To paraphrase a cliché, I more and more appreciate that as scientists we understand less and less.

– Jonathan R. Latham, PhD

<https://nutritionstudies.org/gmo-dangers-facts-you-need-to-know/>

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BASICS: FOOD the preamble to Diabetes

ALL Food is made up of

1. Carbohydrates & Fiber

main energy source. Sugar, starch. 1 gm = 4 calory

2. Protein - building blocks of body. 58% slowly convert to carb 1 gm= 4 calory

3. Fats - give flavor to food. 10% converts to carbs 1 gm = 9 cal

4. Water

5. Minerals

6. Vitamins

Diets? Think in grams. 1 lb= 456 cal      1oz = 30 gm      1 nickle = 5 gm

1 slice bread = 1 oz thus 30 gm = 15 gm carb/2.5gm protein/ 12.5 gm fiber+water

1 small orange = 100 gm = 10gm carb + water

1 oz meat = zero carbs / 7 gm protein / 5 gm fat / 18 gm water & fiber

More on Carbohydrates:

monosaccharide = 1-chain eg) glucose, fructose, galactose AVOID !!

oligosaccharides = 2-4chains of simple sugar. eg) maltose (corn starch), sucrose(cane sugar), lactose (milk)

polysaccharides = long complex chains of sugar ....STARCH as in potatoes  
More slowly absorbed with less immediate effect on blood sugar

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## **Diabetes Mellitus**

- As of 2020, 38% of all US adults had prediabetes.
- 37.3 million people have diabetes—that's 11.3% of the US population.
- 28.7 million people have been diagnosed with diabetes.
- 8.5 million people who have diabetes have not been diagnosed and do not know they have it.
- In 2017, 425 million people had diabetes worldwide
- Type 2 makes up about 90% of the cases.
- The WHO estimates that diabetes resulted in 1.5 million deaths in 2012, making it the 8th leading cause of death.

Diabetes, also known as diabetes mellitus, is a group of common endocrine diseases characterized by sustained high blood sugar levels.

- Diabetes is due to either the pancreas not producing enough insulin, or the cells of the body not responding properly to the insulin produced.
  
- Diabetes, if left untreated, leads to many health complications.
  
- Untreated or poorly treated diabetes accounts for approximately 1.5 million deaths per year.

- NON SPECIFIC SYMPTOMS include blurred vision, headache, fatigue, slow healing of cuts, and itchy skin.
- Prolonged high blood glucose can cause glucose absorption in the lens of the eye, which leads to changes in its shape, resulting in vision changes. Long-term vision loss can also be caused by diabetic retinopathy.
  
- classic symptoms of untreated diabetes are unintended weight loss, polyuria (increased urination), polydipsia (increased thirst), and polyphagia (increased hunger).

TYPES:

**TYPE 1 DIABETES** is characterized by loss of the insulin-producing beta cells of the pancreatic islets, leading to insulin deficiency.

Long ACTING ..... Lantus, levemir, Basaglar

INTERMEDIATE ..... NOVOLIN n, Humulin N

SHORT ..... Novolin R, Novolog, Humulin R  
Humalog, NovoRapid.

**TYPE 2 DIABETES** is characterized by insulin resistance, which may be combined with relatively reduced insulin secretion.

**GESTATIONAL DIABETES** resembles type 2 diabetes in several respects, involving a combination of relatively inadequate insulin secretion and responsiveness. It occurs in about 2–10% of all pregnancies and may improve or disappear after delivery.

- **COMPLICATIONS** due to damage in small blood vessels include damage to the eyes, kidneys, and nerves. **EYES**, known as diabetic retinopathy, is caused by damage to the blood vessels in the retina of the eye, and can result in gradual vision loss and eventual blindness. Diabetes also increases the risk of having glaucoma, cataracts, and other eye problems. It is recommended that people with diabetes visit an optometrist or ophthalmologist once a year.

- Damage to the **KIDNEYS**, known as diabetic nephropathy, can lead to tissue scarring, urine protein loss, and eventually chronic kidney disease, sometimes requiring dialysis or kidney transplantation.

- Damage to the **NERVES** of the body, known as diabetic neuropathy, is the most common complication of diabetes.

The symptoms can include numbness, tingling, sudomotor dysfunction, pain, and altered pain sensation, which can lead to damage to the skin.

- Diabetes-related **FOOT PROBLEMS** (such as diabetic foot ulcers) may occur, and can be difficult to treat, occasionally requiring amputation. Additionally, proximal diabetic neuropathy causes painful muscle atrophy and weakness.

### **MANAGEMENT:**

Diabetes management concentrates on keeping blood sugar levels close to normal, without causing low blood sugar.

THE FOUNDATION OF DIABETIC MANAGEMENT IS:  
dietary changes, exercise, and weight loss,  
THEN THE use of appropriate medications (insulin, oral  
medications).

I. 1<sup>st</sup> line           BIGUANIDE: inhibits liver glucose  
production &       increases peripheral glucose uptake  
METFORMIN

II. 1<sup>st</sup> LINE in T<sub>2</sub>DM + ASCVD/ CVA's  
**GLP-1 RECEPTOR AGONISTS** Glucagon-like peptide-1  
receptor agonists

==> work by activating the GLP-1R,  
rather than inhibiting the breakdown of GLP-1as do  
DPP-4 inhibitors, and are considered more potent.

advantages over older insulin secretagogues, such as  
sulfonylureas or meglitinides, is that they have a lower risk of  
causing hypoglycemia.  
significant improvements in cardiovascular and renal  
outcomes.

- 1● albiglutide (Tanzeum, manufactured by GSK), approved  
in 2014
- 2● dulaglutide (Trulicity, manufactured by Eli Lilly),  
approved in 2014
- 3● exenatide (brand Byetta, mfg by AstraZeneca), approved  
2005/2012

- 4● liraglutide (Victoza/, Saxenda for obesity, mfg by Novo Nordisk), approved in 2010
- 5● lixisenatide ( Adlyxin in US, mfg by Sanofi), approved in 2016
- 6● semaglutide (Ozempic/ Rybelsus, Wegovy for obesity, mfg by Novo Nordisk), approved in 2017
- 7● tirzepatide (Mounjaro, manufactured by Eli Lilly), approved in 2022

### III. 1<sup>st</sup> LINE T<sub>2</sub>DM WITH HEART FAILURE OR WITH RENAL FAILURE

**SGLT2 INHIBITORS:** SGLT2 inhibitors, also called gliflozins or flozins, are a class of medications that modulate Sodium -glucose transport proteins in the nephron (the functional units of the kidney),

- unlike SGLT1 inhibitors that perform a similar function in the intestinal mucosa

- THEY inhibit reabsorption of glucose in the kidney and therefore lower blood sugar WITH SUGAR LOADED URINE.
- gliflozins have been shown to provide significant cardiovascular benefit in patients

- 1● Bexagliflozin was approved brand Brenzavvy in January 2023
- 2● Canagliflozin was the first SGLT2 inhibitor approved March 2013, brand INVOKANA
- 3● Dapagliflozin is the first SGLT2 inhibitor approved EU 2012. United States brand FARXIGA, 2014.

- 4● Empagliflozin, approved US 2014, brand JARDIANCE by Boehringer Ingelheim.
- 5● Ertugliflozin was U S brand name STEGLATRO, 2017

IV. 2<sup>ND</sup> LINE: : : : **THIAZOLIDINEDIONES**

also known as glitazones. Thiazolidinediones or TZDs act by activating PPARs (peroxisome proliferator-activated receptors), a group of nuclear receptors, specific for PPAR $\gamma$  (PPAR-gamma, PPARG).

- Insulin resistance is decreased
- Adipocyte differentiation is modified
- VEGF-induced angiogenesis is inhibited
- Leptin levels decrease (leading to an increased appetite)
- Levels of certain interleukins (e.g. IL-6) fall
- Antiproliferative action
- Adiponectin levels rise

V. 2<sup>nd</sup> LINE : : : : : **SULFONYLUREAS**

Increase insulin secretion by binding Beta-cell receptors. Taken 30-60 minutes before food. Start with low dose and gradually increase over weeks

- 1• glipizide (Brand Glucotrol)
- 2• chlorpropamide (Brand Diabinese)
- 3• glimepiride (Brand Amaryl)
- 3• glyburide (Brand Micronase/ DiaBeta)
- 4• Tolbutamide (Tolinase)

VI. 2<sup>nd</sup> LINE : : : : DPP-4 INHIBITORS  
 a class of oral hypoglycemics that block the enzyme dipeptidyl peptidase-4 (DPP-4).

They inhibit enzyme that breaks down endogenous GLP (incretin secreted from intestinal L cells). Increased GLP reduces blood glucose by inhibiting glucagon release and stimulating insulin secretion. Avoid if hx of pancreatitis.

- 1• Sitagliptin (approved 2006, Merck & Co. as **Januvia**)
- 2• Vildagliptin[7] (EU 2007, Novartis as **Galvus**)
- 3• Saxagliptin (US 2009, as **Onglyza**)
- 4• Linagliptin (US 2011, as **Tradjenta** by Eli Lilly)
- 5• Alogliptin (US 2013, **NESINA** by Takeda)

VII. 2<sup>ND</sup> LINE : : : : : : MEGLITINIDES  
 These increase insulin secretion with shorter onset and half-life than Sulfonylureas. Take before each meal, never when fasting. Side effects include weight gain and hypoglycemia.

- 1• nateglinide (STARLIX)
2. repaglinide (PRANDIN)

VIII. 2<sup>ND</sup> LINE : : : : ALPHA-GLUCOSIDASE INHIBITORS

● These block polysaccharide and disaccharide breakdown and decrease postprandial hyperglycemia. Give WITH food. Start low and increase weekly . No use in patients with GI issues.

- work by preventing the digestion of carbohydrates (such as starch and table sugar). Carbohydrates are normally converted into simple sugars (mono-saccharides) by alpha-glucosidase enzymes present on cells lining the intestine, enabling mono-saccharides to be absorbed through the intestine. Hence, alpha-glucosidase inhibitors reduce the impact of dietary carbohydrates on blood sugar.

- 1● Acarbose- Precose or Glucobay
- 2 ● Miglitol – Glyset

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## **CDC Issues 'Health Alert' Over Measles Cases Across**

**US** The agency's alert said that between Dec. 1, 2023, and Jan. 23, it received reports of 23 confirmed measles cases.

By Jack Phillips 1/29/2024

## **Surprising Remedies for Measles Might Have Saved Many Lives**

by Yuhong Dong February 08, 2024 Epoch Times

### **THE PROBLEM:**

Prior to the 1960s, an estimated 30 million cases and 2.6 million deaths due to measles occurred annually worldwide.

Young children have been the most affected, as seen in 1906 when 85 percent of reported deaths were children under age 5. From 1912 to 1922, an average of 6,000 measles-related deaths in the United States were reported each year.

the measles virus is a negative-strand RNA virus, similar to SARS-CoV-2, Measles features a distinctive rash that typically begins on the face and extends downward, covering the neck, trunk, arms, legs, and feet. As the rash progresses, flat red spots may merge and individuals often simultaneously experience a high fever.

## Measles Decline Not Due to Vaccine

the death rate for measles in the United States from 1900 to 1987. Before the introduction of the measles vaccine in 1963, the death rate had declined from its peak by a massive 98.7 percent.

A 2021 Indian study reported that during a 2018 measles outbreak, children who were unvaccinated but received preventative vitamin A supplementation had a 77 percent reduced risk of contracting measles.

research indicates that vitamin A supplementation significantly lowers the risk of severe complications and death from measles, particularly in undernourished populations.

Vitamin A plays an essential role in maintaining the normal epithelial tissues. It is crucial to the integrity of the mucosal cell layer, its protective mucous covering, and its ability to shield us from viruses.

Historical evidence suggests that the measles vaccine is not the prominent hero we've been told it is for preventing measles. Enhancing our natural immunity is a more effective strategy for controlling measles infection, mortality, and morbidity.

## Methylene Blue:

Origins and Early Use

If you've ever worn **DENIM JEANS**, the chances are high that Methylene Blue was used in some form in its production.

Methylene Blue has an intriguing history in – believe it or not — **TEXTILES** dating back to its discovery during the mid-19th century.

It actually revolutionized textile production processes at that time. Methylene Blue's unparalleled ability to impart an exquisite blue hue quickly made it a beloved component of fashion and style. From luxurious garments worn by aristocrats, to intricately patterned fabrics used by mass populations, its brilliant presence enchanted the world. At that time, no one knew that Methylene Blue would soon emerge as a transformative force in medicine – specifically cancer treatments.

Methylene Blue's vibrant blue hue instantly attracted the attention of scientists and physicians. It quickly made a bold and significant move into healthcare due to its unique properties and therapeutic potential. And scientists are still uncovering the impacts of this unique compound today.

**Diagnostic Tool:** Methylene Blue serves an invaluable diagnostic function in emergency medicine. When suspected gastrointestinal leakage exists, for example, Methylene Blue can be taken orally or intravenously to detect potential abnormalities in the digestive tract and detect leaks or abnormal connections that enable healthcare providers to provide accurate diagnoses and prompt interventions. Its vivid blue hue helps healthcare providers easily spot potential leaks or abnormal connections within it for accurate diagnoses and fast intervention.

Methylene Blue in Emergency Medicine Countering Poisonings: Methylene Blue's primary use in emergency medicine is as an antidote against poisonings, such as **CARBON MONOXIDE POISONING**, **CYANIDE POISONING** or **methemoglobinemia**. By helping convert toxic compounds to safe ones and restore cell functioning in emergency room patients, Methylene Blue plays an essential role.

Methylene Blue's effectiveness as an antidote lies in its unique property as a redox agent, aiding electron transfer and supporting detoxification processes. When faced with carbon monoxide poisoning, Methylene Blue forms a strong bond with carbon monoxide molecules to safely eliminate them from the body; while in cases of cyanide poisoning it helps convert toxic cyanide ions to less dangerous forms reducing risks of severe toxicity. Furthermore, its role in treating methemoglobinemia – an abnormal oxygen-carrying capacity of blood – speaks volumes of Methylene Blue's effectiveness as an emergency medical countermeasure.

Supercharging Cell Energy: Methylene Blue is like a power-up for our cell's energy factories, the hard-working mitochondria. It fine-tunes their performance during a process called oxidative phosphorylation, acting as a conductor that helps electrons flow smoothly. This boosts cell respiration and unleashes maximum energy production, allowing our cells to thrive and operate at their peak efficiency.

## **Anticancer Potential**

Exciting new research indicates that Methylene Blue can selectively target and inhibit mitochondrial function within cancer cells, leading to compromised energy production and compromised viability. While more investigation may be required, these preliminary results indicate its possible future use as a cancer therapy treatment solution.

This phenomenon is particularly interesting in light of **Photodynamic Therapy's** breakthrough in cancer care. Photodynamic Therapy (PDT) is an innovative and noninvasive cancer therapy which employs light to destroy cancer cells using special compounds called photosensitizing agents that accumulate more in cancerous cells due to how cancerous tissues use blood than healthy ones. PDT agents can either be given orally or intravenously and work best when given regularly throughout treatment sessions, providing constant exposure.

Once photosensitizing agents have built up in a tumor, they go dormant. PDT begins when specific wavelengths of visible or near-infrared light is introduced directly onto it from external devices or even internally through fiber-optic cables depending on where exactly the tumor lies.

Light interacts with photosensitizing agents to induce a chemical reaction that produces reactive oxygen species (ROS).

ROS molecules act like powerful weapons against cancer cells by damaging proteins, fats and DNA structures – leading to stress for them and ultimately leading to programmed cell death.

PDT therapy is highly selective due to the fact that photosensitizing agents tend to accumulate more in cancer cells than healthy ones, enabling PDT to target cancerous ones while sparing healthy ones and tissues around them. Cancer cells feature unique characteristics like increased blood vessel formation and altered metabolism that cause this effect; when light activates these agents, reactive oxygen species are produced, creating a targeted attack against cancer cells.

PDT has demonstrated tremendous promise in treating various forms of cancer, most commonly skin cancers like basal cell carcinoma, squamous cell carcinoma and actinic keratosis. PDT also shows great promise when used against lung, esophageal, bladder and gastrointestinal cancers; researchers are currently exploring its use against head-and-neck, prostate and brain tumors.

– <https://templetonwellness.com/articles/methylene-blue-cancer-breakthrough/>