Volume 2024 Number 34 MICROGREENS WORLD Monday September 16 2024

WEEKLY DIGEST

MICROGREENS MAY HOLD THE SECRET TO LOWERING LDL CHOLESTEROL LEVELS AND TRANSFORMING YOUR CARDIOVASCULAR HEALTH FOREVER

SCIENTISTS STUDY HOW SALT POSITIVELY AFFECTS THE GROWTH AND NUTRITIONAL COMPOSITION OF MICROGREENS

CREATIVE RECIPES: Sea Salt-Cured Microgreen Medley with Aged Parmesan Foam
NUTRITION SCIENCE: Microgreens and The Cutting Edge of Nutritional Science
CULTIVATION TECHNIQUES: A Self-Sustainable Hydroponic Garden - Microgreen in 7 Days

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Microgreen Magic: The Tiny Veggies That Could Crush Your Cholesterol

Vol. 2024 No. 34 Monday, September 16, 2024

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Nutrition Science

Microgreens: The Cutting Edge of Nutritional Science

Recent research has positioned microgreens at the forefront of nutritional science, offering a concentrated source of essential nutrients and bioactive compounds.

These tiny greens have been found to contain significantly higher concentrations of vitamins, minerals, and bioactive compounds compared to their mature counterparts, making them a potent source of nutrition in small quantities.

Studies have revealed that microgreens from the Brassicaceae family possess a particularly impressive nutrient profile.

For instance, red cabbage microgreens contain 260 times more beta-carotene than mature red cabbage (Choe et al., 2018).

Additionally, microgreens are rich in other essential nutrients such as vitamins C, E, and K, as well as minerals like potassium, iron, zinc, magnesium, and copper (Bhaswant et al., 2023).

The nutritional composition of microgreens can vary based on factors such as plant species,

growing conditions, and harvesting time.

Brassica family microgreens are notably high in glucosinolates, compounds recognized for their potential anti-cancer properties.

Furthermore, microgreens contain significant levels of polyphenols and other antioxidants, which may help combat oxidative stress and inflammation (Bhaswant et al., 2023).

Recent clinical studies have demonstrated promising health benefits associated with microgreen consumption.

These include lowering cholesterol levels, reducing blood sugar, and improving glucose metabolism (Bhaswant et al., 2023).

Such findings suggest that incorporating microgreens into the diet could play a role in preventing and managing chronic diseases like cardiovascular disorders and diabetes.

As research continues to uncover the nutritional potential of microgreens, they are increasingly recognized as a valuable addition to a healthy diet, offering a concentrated source of nutrients in a small package.

References:

Bhaswant, M., Shanmugam, D. K., Miyazawa, T., Abe, C., & Miyazawa, T. (2023). Microgreens—A Comprehensive Review of Bioactive Molecules and Health Benefits. Molecules, 28(2), 867.

Choe, U., Yu, L. L., & Wang, T. T. (2018). The science behind microgreens as an exciting new food for the 21st century. Journal of Agricultural and Food Chemistry, 66(44), 11519-11530.

Creative Recipes

Umami Explosion: Sea Salt-Cured Microgreen Medley with Aged Parmesan Foam

Here's a luxurious microgreens recipe that highlights the umami-enhancing properties of salt, suitable for a 5-star Michelin restaurant.

Recipe Information

- Prep Time: 30 minutes
- Curing Time: 10 minutes
- Assembly Time: 15 minutes
- Total Time: 55 minutes
- Category: Appetizer
- Method: Curing, Foam Preparation, and Assembly
- Cuisine: Modern Gastronomy
- Yield: 4 servings

The dish is categorized as an appetizer due to its small, intricate nature, typical of high-end tasting menus.

The method highlights the key techniques used, while the cuisine is classified as Modern Gastronomy to reflect its innovative approach to flavors and presentation.

The yield of 4 servings is appropriate for a fine dining experience where portions are often smaller but more numerous throughout a tasting menu.

Ingredients:

- Assorted microgreens (arugula, radish, mustard, and shiso)
- Fleur de sel
- Aged Parmesan cheese
- Black truffle
- Quail eggs
- Shiitake mushroom powder
- Kombu seaweed
- Yuzu juice
- Extra virgin olive oil
- Nitrogen oxide for foam

Preparation:

1. Gently cure the microgreens in fleur de sel for 10 minutes to intensify their flavors.

2. Create a Parmesan foam by blending aged Parmesan with warm water and a touch of shiitake mushroom powder. Charge with nitrogen oxide for a light, airy texture.

3. Prepare an umami-rich dressing by infusing extra virgin olive oil with kombu seaweed, then mixing with yuzu juice and a pinch of fleur de sel.

4. Lightly poach quail eggs in salted water, maintaining a runny yolk.

5. Shave a fresh black truffle.

Plating:

1. Arrange the salt-cured microgreens in a delicate bouquet on a handcrafted ceramic plate.

2. Nestle the poached quail egg among the microgreens.

3. Carefully spoon the Parmesan foam around the microgreens.

4. Drizzle the umami dressing over the dish.

5. Finish with shaved black truffle and a final sprinkle of fleur de sel.

This dish showcases how salt enhances the umami flavors in microgreens, Parmesan, truffle, and kombu, creating a harmonious and intensely savory experience.

The varying textures and the interplay of salt-cured microgreens with the rich Parmesan foam and umami dressing offer a complex, sophisticated flavor profile worthy of a Michelin-starred establishment.

Remember to follow all food safety protocols when preparing and consuming this meal.

Community News

Mark Your Calendars: How to Grow Microgreens (Online Oct 24 at 6:30 PM)

The River Market Community Co-op is hosting an online class on **October 24 from 6:30 to 8:00 PM**, focusing on growing microgreens.

The University of Minnesota Extension offers the class.

Participants will learn about these quick-growing vegetable and herb seedlings, suitable for indoor cultivation, which enhance salads and various dishes.

The course, taught by Ramsey County Master Gardener volunteers, emphasizes best practices for a healthy landscape and diet.

The cost ranges from free for co-op owners to $5 for others, and attendees must **register online** to receive a Zoom link and handout.

Classes will not have refunds within 48 hours of the start time.

Get Tickets: River Market Community Co-op. (2023, October 24). *How to grow microgreens.* https://www.universe.com/events/how-to-grow-microgreens-online-tickets-GDR61W

North Wales Microgreen company celebrates Welsh Produce of the Year award

Fresh and Tasty Microgreens, a North Wales company based

near Abergele, celebrated being awarded Welsh Produce of the Year at the Food Awards Wales 2024.

The business, owned by Steve Holland with support from his family, has been recognized for its quality microgreens supplied to local restaurants and customers.

The awards ceremony took place in Cardiff on September 9, 2024, and highlighted the achievements of various Welsh culinary establishments.

Steve expressed his gratitude for the award, acknowledging the support from customers and the community, and reaffirmed their commitment to producing high-quality, sustainable microgreens.

The recognition emphasizes the growing microgreens sector in Wales, with fellow producers also noted for their contributions.

Fresh and Tasty Microgreens aims to expand its reach and maintain its leadership role in delivering fresh produce throughout North Wales.

Source: Holland, S. (2024, September 12). North Wales Microgreen company celebrates Welsh Produce of the Year award. Source: Wrexham.com. https://www.wrexham.com/news/north-wales-microgreen-company-celebrate-welsh-produce-of-the-year-award-256827.html

From Cup to Community

The "Cup to Community" initiative at Sunshine Beach State School, Sunshine Beach, Queensland, Australia, aims to engage students with local businesses and the community

to foster sustainability and healthy eating.

Led by Year 4 students and outdoor educator Di Seels, the project involves growing microgreens—such as lentils, chickpeas, and peas—in eco-friendly cups provided by local café Sunshine Social.

This hands-on program helps students learn about sustainable food sources while connecting them with local enterprises like Pick of the Crop and Peregian IGA.

After just nine days of growth, the microgreens were harvested and delivered to Sunshine Social, where they will be sold to benefit local charities, including You Turn, which addresses homelessness.

The initiative emphasizes the importance of community engagement and environmental education, contributing to students' understanding of healthy eating habits and environmentally friendly practices in food production.

Source: Noosa Today. (2024, September 16). From cup to community. Noosa Today. https://noosatoday.com.au/news/16-09-2024/from-cup-to-community/

Successful Marketing of Microgreens: The Guide and Templates

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FEATURED ARTICLE

Microgreen Magic: The Tiny Veggies That Could Crush Your Cholesterol

You are likely familiar with the negative impacts of **high cholesterol**.

But you might be surprised to know that tiny microgreens could hold the key to reducing your **LDL levels** and transforming your heart health.

With higher nutritional density compared to their mature counterparts, microgreens are rich in polyphenols, antioxidants, and glucosinolates, all of which have been shown to have positive effects on **cardiovascular health**.

In fact, research has found that **red cabbage microgreens** can significantly lower LDL cholesterol levels.

As you investigate the world of microgreens, you will uncover how these tiny veggies can have a significant impact on your well-being.

What We Know About Microgreens Nutrition

In terms of **nutritional density**, **microgreens** have a distinct advantage over their mature counterparts.

As you investigate the world of microgreens, you'll uncover a diverse array of varieties, each with its **unique nutrient profile**.

For instance, pea shoots are rich in protein and fiber, while radish greens are high in vitamin C and potassium.

Cilantro microgreens, on the other hand, are packed with antioxidants and have been shown to have anti-inflammatory properties.

With their **high nutrient density**, microgreens are an excellent addition to salads, sandwiches, and other dishes.

By incorporating microgreens into your culinary repertoire, you can reap their numerous **health benefits** while also supporting environmentally friendly growing techniques.

The Cholesterol-Lowering Power of Microgreens

Research on **microgreens** and their potential to **lower cholesterol levels** has yielded promising results, particularly with red cabbage microgreens.

Studies have shown that incorporating these microgreens into your diet can significantly lower circulating **LDL levels**, reducing the risk of **cardiovascular disease**.

You can also expect a decrease in liver cholesterol and triglycerides, as well as anti-inflammatory effects.

These microgreen benefits can be attributed to their high **nutrient density**, making them an excellent **dietary intervention** for cholesterol management.

By incorporating red cabbage microgreens into your diet, you can take a proactive approach to maintaining healthy cholesterol levels and reducing the risk of cardiovascular disease.

This is especially crucial, as cardiovascular disease is a leading cause of death in the United States, making it essential to investigate alternative vegetable varieties for health implications.

Key Nutrients in Microgreens for Heart Health

Microgreens' **high nutrient density** is attributed mainly to their rich content of **polyphenols and antioxidants**, which play an essential role in maintaining heart health.

When you consume microgreens, you're providing your body with a concentrated dose of these beneficial compounds, which have been shown to help reduce inflammation and oxidative stress.

Different microgreen varieties, such as red cabbage and broccoli, are rich in glucosinolates, which have been linked to improved **cardiovascular health**.

Additionally, microgreens are a good source of fiber, which can help support **healthy nutrient absorption** and dietary habits.

How to Incorporate Microgreens into Your Diet

With a better understanding of the key nutrients in **microgreens** that support **heart health**, let's investigate ways to incorporate these **nutrient-dense greens** into your diet.

To start, you can add fresh microgreens to **salads and sandwiches** for a burst of flavor and nutrition.

Growing your own microgreens allows you to choose from a variety of microgreen varieties, each with unique flavor profiles and health benefits.

In the kitchen, experiment with different **culinary techniques**, such as blending microgreens into smoothies or using them as a garnish for soups and main dishes.

Microgreen pesto is another delicious option - simply blend microgreens with olive oil, garlic, and lemon juice, and serve with whole grain pasta or as a dip.

Choosing and Storing Store-Bought Microgreens

When purchasing store-bought microgreens, it's vital to take a close look at the product before making a decision.

Look for microgreens that have been grown using **sustainable farming practices**, as these methods promote nutrient-rich soil and better nutrient absorption.

Choose from a variety of microgreens, such as pea shoots or radish greens, which offer **culinary versatility** and cater to market trends.

Check the packaging for any **signs of damage** or moisture accumulation, which can lead to spoilage.

Store microgreens in a **sealed container**, keeping them refrigerated at a temperature below 40°F (4°C).

Use them within 3 to 5 days of purchase for **optimal flavor and nutrition**.

Proper storage techniques will help maintain the delicate leaves and guarantee a longer shelf life.

The Future of Microgreens in Nutrition and Culinary Applications

As the demand for **nutrient-dense foods** continues to grow, researchers are now turning their attention to the vast potential of microgreens in nutrition and culinary applications.

You'll find ongoing research into the **health benefits** of microgreens, including their potential to **lower cholesterol levels** and reduce the risk of cardiovascular disease.

Emerging trends in restaurants and home cooking are also highlighting the versatility and flavor of microgreens.

As global agriculture continues to evolve, microgreens are being recognized for their **sustainability** and potential to address global nutrition challenges.

By incorporating microgreens into nutrition education and health trends, you can help promote **healthier eating habits** and support the development of more sustainable food systems.

Wrap-up: Microgreens and Lowering Cholesterol Levels

You've uncovered the potential of **microgreens** to transform **cholesterol management**.

By incorporating these nutrient-dense greens into your diet, you may lower your risk of **heart disease** and stroke.

With their high levels of polyphenols, antioxidants, glucosinolates, and fiber, microgreens have shown promise in reducing LDL cholesterol and triglycerides.

As research continues to reveal their benefits, you can start reaping the rewards of microgreens by adding them to your meals and exploring their culinary applications.

Research

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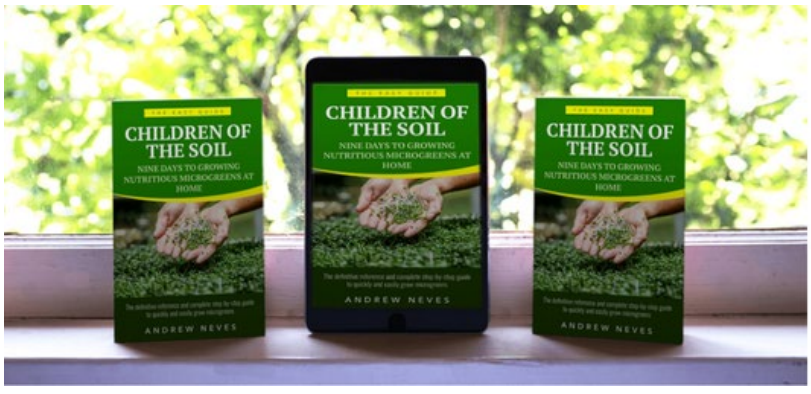

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Evidence-based Expertise

Scientists study how salt positively affects microgreens

The study examines how varying levels of salinity, particularly from municipal water, influence the growth and nutritional composition of microgreens, specifically broccoli and purslane.

It highlights the potential of using slight salinity as a stressor, termed "eustress," which can enhance nutritional quality without compromising plant yield.

Research findings suggest that broccoli microgreens may benefit from mild salinity stress, showing improved phytochemical properties under certain conditions.

At the same time, purslane does not exhibit the same potential due to its inherent salinity tolerance.

For growers, the implications are significant: they can optimize water quality in controlled environments to potentially increase the nutritional benefits of microgreens, catering to the growing demand for these nutrient-rich plants.

Consumers can expect that the microgreens they purchase may have enhanced nutritional profiles due to these agricultural practices.

Understanding the interaction between salinity and plant physiology offers a pathway for improved cultivation strategies in response to consumer preferences for quality and nutrition.

Source: Chinese Academy of Sciences. (2023). *New study explores effects of salinity eustress on microgreens in controlled environments.* Technology in Horticulture. https://doi.org/10.48130/TIH-2023-0004

Cultivation Techniques

Self-Sustainable Hydroponic Garden Autonomously Grows Microgreen Superfoods in 7 Days

Minigro is an innovative hydroponic garden system showcased at IFA 2024.

This compact device, roughly the size of an aquarium, autonomously grows microgreens in just seven days, making it ideal for beginners and busy individuals.

Its automated features include real-time monitoring of growing conditions through advanced sensors, which control water, nutrients, light, and temperature.

The device even adjusts its LED lighting based on natural sunlight.

It alerts users about environmental changes, such as open windows.

Maintenance tasks like adding nutrients or cleaning are infrequent, with notifications sent via an app.

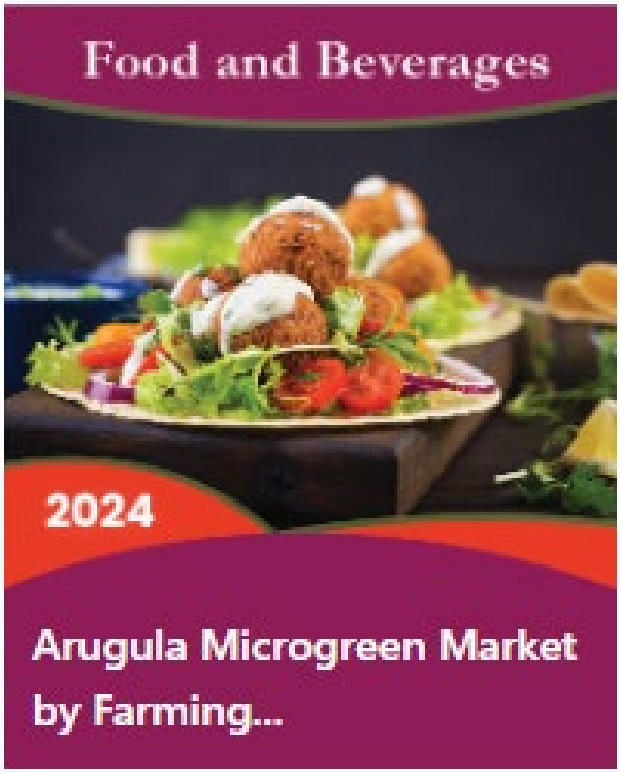
This allows users to enjoy fresh, nutrient-rich greens year-round without the challenges of traditional gardening.

The Minigro caters to those with limited space, like apartment dwellers, merging technology with sustainable living effortlessly.

Source: Sheth, S. (2024, September 8). *Self-sustainable hydroponic garden autonomously grows microgreen superfoods in 7 days: Minigro at IFA 2024*. Yanko Design. https://www.yankodesign.com/2024/09/08/self-sustainable-hydroponic-garden-autonomously-grows-microgreen-superfoods-in-7-days-minigro-at-ifa-2024/

Emerging Industry News

Arugula Microgreen Market Insight, Valued at USD 0.16 Billion in 2021



The Arugula Microgreen market is gaining traction, valued at approximately USD 0.16 billion in 2021, with a projected growth rate exceeding 9% CAGR from 2022 to 2029.

This upward trend is driven by an increasing demand for functional foods fueled by a growing health-conscious

consumer base and the popularity of health supplements.

Arugula Microgreens are rich in essential nutrients, including vitamins B1, K1, and C, making them desirable for consumers seeking nutritious options.

However, market growth faces challenges, such as limited awareness about health benefits and a shortage of skilled professionals.

North America currently leads the market, primarily due to its established players and consumer demand.

At the same time, the Asia Pacific region is set to experience the highest growth.

Companies like AeroFarms, Gotham Greens, and Madar Farms are significant competitors in this expanding market.

Source: Report Ocean. (2024, September 9). *Arugula microgreen market insight, valued at USD 0.16 billion in 2021, projected to grow at over 9% CAGR from 2022 to 2029.* https://www.taiwannews.com.tw/news/5933139

Commercial Best Practices

Optimizing your online sales and marketing

In this age of digital interconnectedness, astute microgreen farmers must harness the power of the World Wide Web to distinguish their agricultural enterprise.

Ms. Nina Galle, a respected authority in the field of agricultural marketing, has proffered invaluable insights on this subject in her treatise,

"Ready Farmer One, The Farmer's Guide to Selling and Marketing."

Ms. Galle asserts, and I concur, that a well-crafted online presence can significantly expand one's clientele and, consequently, augment one's revenue.

Moreover, she posits that judicious use of digital sales channels can have the salubrious effect of bolstering in-person transactions at farmers' markets, Community Supported Agriculture programs, and food distribution hubs.

Of particular note is Ms. Galle's emphasis on the strategic deployment of promotional offers and incentives.

These tools, when wielded with precision, serve to both attract and retain a loyal customer base.

Additionally, she underscores the critical role of visual elements in cultivating trust in one's brand - a principle I have long advocated in my own work on microgreens farming.

Furthermore, Ms. Galle delves into the intricacies of order management and fulfillment processes, areas that demand meticulous attention to ensure customer satisfaction.

She also expounds upon the art of storytelling and brand cultivation, practices that I believe are essential in fostering a meaningful connection with one's patrons.

Lastly, Ms. Galle offers guidance on leveraging social media platforms to engage with one's audience effectively.

While these modern communication channels may seem far removed from the traditional methods of our forebears, I posit that they represent a natural evolution of community-building principles.

Whether you are a neophyte in the realm of online commerce or a seasoned veteran, I implore you to heed Ms. Galle's counsel.

By doing so, you shall not only cultivate a robust online presence but also nurture the growth of your microgreens enterprise as a whole.

Source: Galle, N. (n.d.). (September 9, 2024). *Optimizing your online sales and marketing with Nina Galle, co-author of Ready Farmer One: The Farmer's Guide to Selling and Marketing* | A podcast about optimizing your online farm sales and marketing. https://recast.simplecast.com/a9170134-c036-4307-84be-ae566817ebee?t=1h5m59s

Meet SweGreen: This Swedish vertical farm start-up grows vegetables inside Supermarkets.

SweGreen, a Swedish startup, is transforming supermarket spaces into vertical farms using a hydroponic method to cultivate a variety of vegetables.

This innovative approach addresses critical issues such as water scarcity, limited agricultural land, and reliance on international markets.

SweGreen's farms not only minimize transport emissions but also enhance the taste and longevity of produce.

Customers can witness the growth and harvest of these crops, which include 100 species of lettuce and herbs, directly in the store.

Utilizing artificial intelligence, the company optimizes production based on seasonal demand and consumer preferences.

SweGreen's farming installations can vary in size, with options capable of producing up to 300 crops daily, making it an adaptable solution for supermarkets, restaurants, and other establishments seeking sustainable food sources.

Their efforts have earned them recognition, including the IKANO Sustainability Award

Source: Pereira, I. T. (2024, September 15). *Meet SweGreen: This Swedish vertical farm start-up grows vegetables inside of Source: supermarkets.* Euronews. https://www.euronews.com/green/2024/09/15/meet-swegreen-this-swedish-vertical-farm-start-up-grows-vegetables-inside-of-supermarkets

and a spot on the FoodTech 500 list of influential startups.

As SweGreen expands its offerings to include fruit-bearing plants and microgreens, it exemplifies an innovative step forward in local food production and sustainability.

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