

A woman in a white dress stands on a beach at sunset, looking out at the ocean. She is holding a pair of white shoes. The sky is filled with soft, golden light from the setting sun, and the water reflects the light. The overall mood is serene and peaceful.

SPIRULINE™
GANDALF
SPIRULINA



Hawaiian Spirulina





SPIRULINETM GANDALF SPIRULINA

- Operating since 1983
- 70 Employees
- ISO 9001.2000 Certified Quality Management System
- GMP Certified by NPA: Good Manufacturing Practices
- Public Company:
NASDAQ: CYAN



Keahole Point, Hawaii



The World's Premier Algae Production Facility

- ◆ Large, Flexible Capacity
- ◆ Eighty Five Culture Ponds
- ◆ 40 Hectares/90 Acres



Environmental Responsibility and Sustainability

- Two patents
 - Ocean Chill Drying™ uses sea water for cooling in drying process
 - Cogeneration of electricity uses CO2 in algae ponds
- Audubon award in 2001 for protection of endangered bird species
- World's most productive crop
- Water recycling
- Closed system
- Ponds cooled with sea water
- Buildings air conditioned with sea water





SPIRULINETM
GANDALF
SPIRULINA

All products from microalgae

- All Natural Process
- Pesticide & Herbicide Free
- GMO-free



Supplying Hawaiian Spirulina Pacifica for 24 years



OPTIMUM PROTECTION PACKAGING

Laminated & Foild bag, metalized (Air & light protection)

Hawaiian Spirulina | Spiruline Hawaïenne



120 x 1000 mg
Tablets | Comprimés



REAL SIZE
TAILLE RÉELLE

NHPs / NPN: Submitted / En demande

EMBALLAGE
Optimum Protection Optimale
PACKAGING

Hawaiian Spirulina | Spiruline Hawaïenne



150 g
Powder | Poudre



SPIRULINA /
SPIRULINE
100% Pure
Fine powder / Poudre fine

NHPs / NPN: Submitted / En demande

EMBALLAGE
Optimum Protection Optimale
PACKAGING

Hawaiian Spirulina | Spiruline Hawaïenne



150 x 400 mg
V-Caps
Capsules Végétariennes

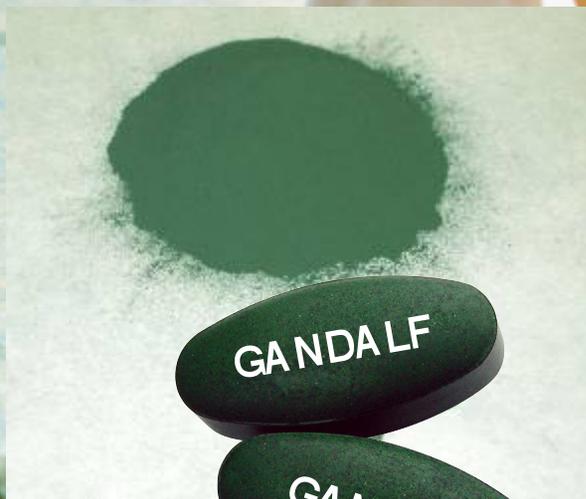


REAL SIZE
TAILLE RÉELLE

NHPs / NPN: Submitted / En demande

EMBALLAGE
Optimum Protection Optimale
PACKAGING

Hawaiian Spirulina Gandalf®



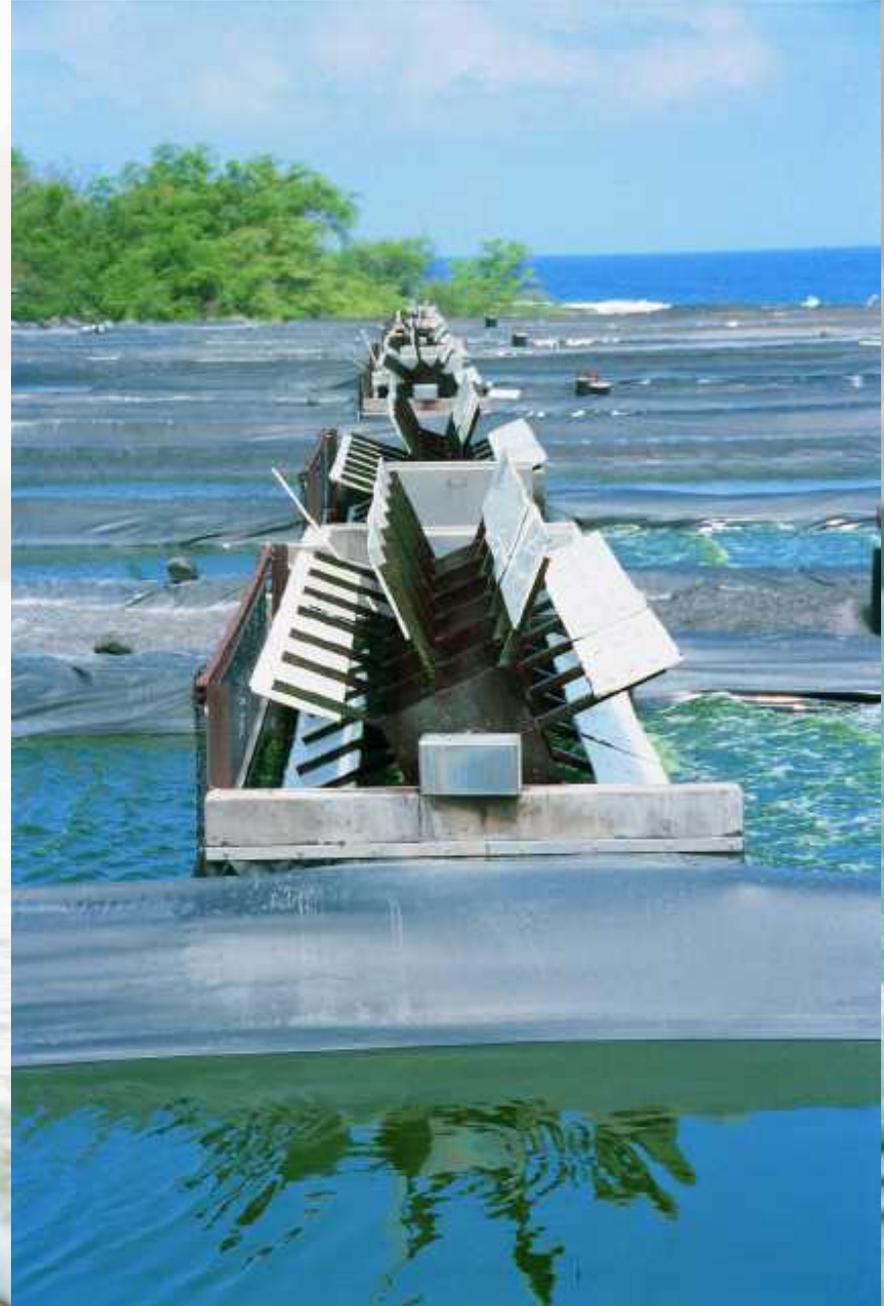
GANDALF

GANDALF

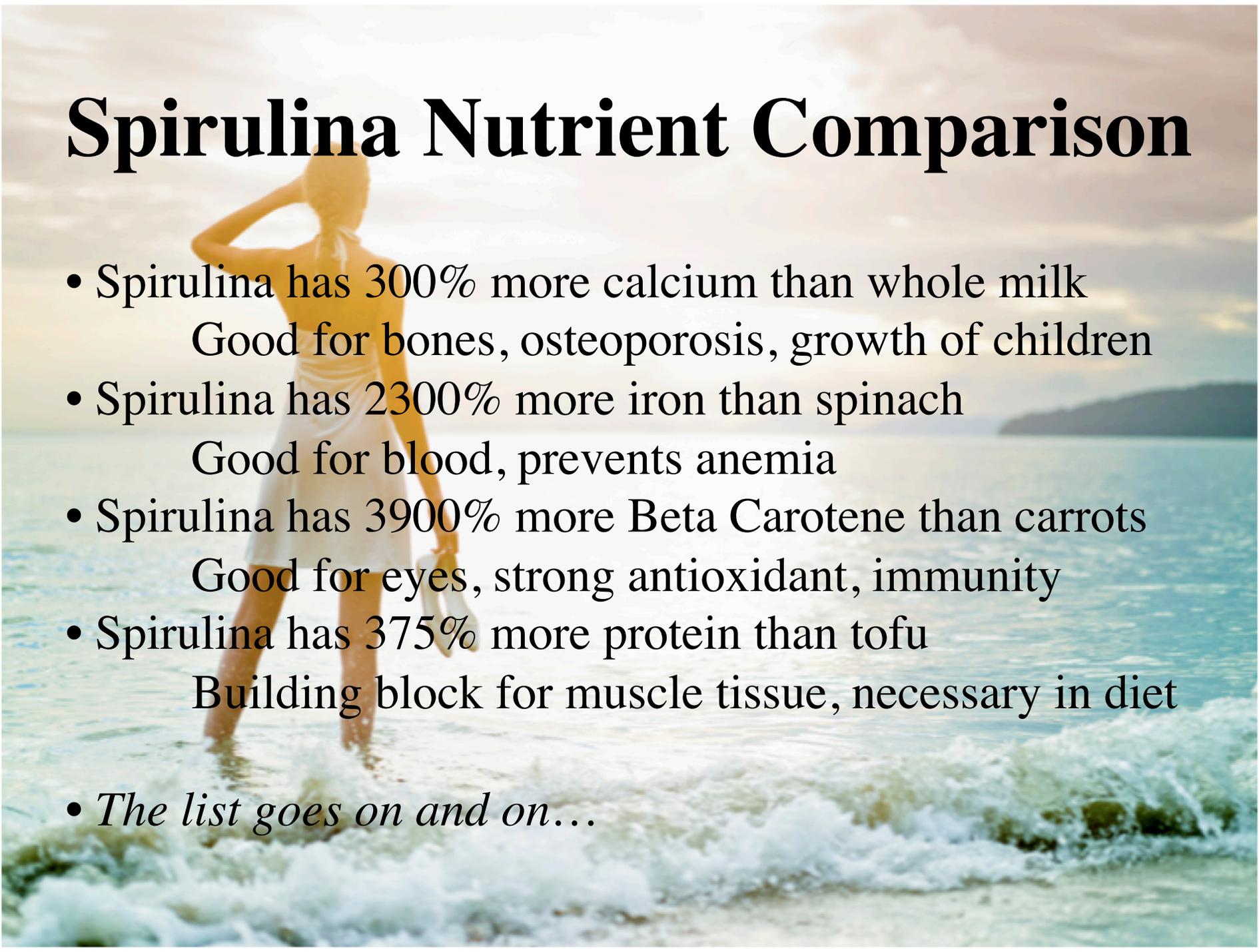


World's Healthiest Food

- More nutrition gram-per-gram than any other product in the world



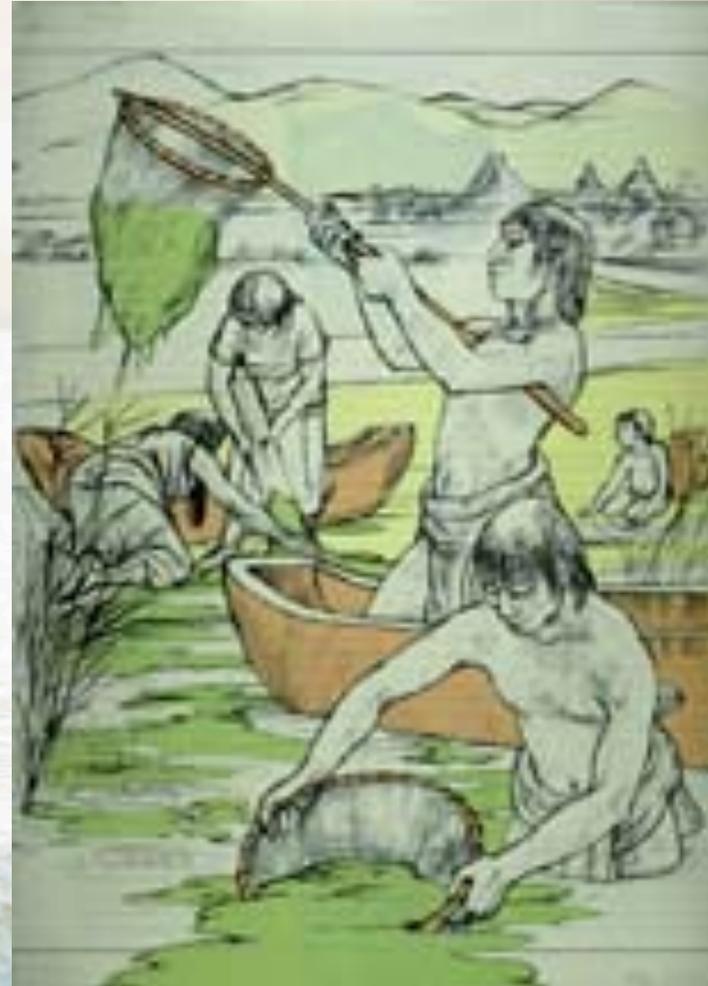
Spirulina Nutrient Comparison

A woman in a white dress stands on a beach at sunset, looking out at the ocean. The scene is serene, with waves crashing on the shore and a soft, golden light from the setting sun. The woman is positioned in the center-left of the frame, her back to the camera as she gazes towards the horizon. The sky is a mix of orange, yellow, and light blue, while the water is a deep, calm blue. The overall mood is peaceful and contemplative.

- Spirulina has 300% more calcium than whole milk
Good for bones, osteoporosis, growth of children
- Spirulina has 2300% more iron than spinach
Good for blood, prevents anemia
- Spirulina has 3900% more Beta Carotene than carrots
Good for eyes, strong antioxidant, immunity
- Spirulina has 375% more protein than tofu
Building block for muscle tissue, necessary in diet
- *The list goes on and on...*

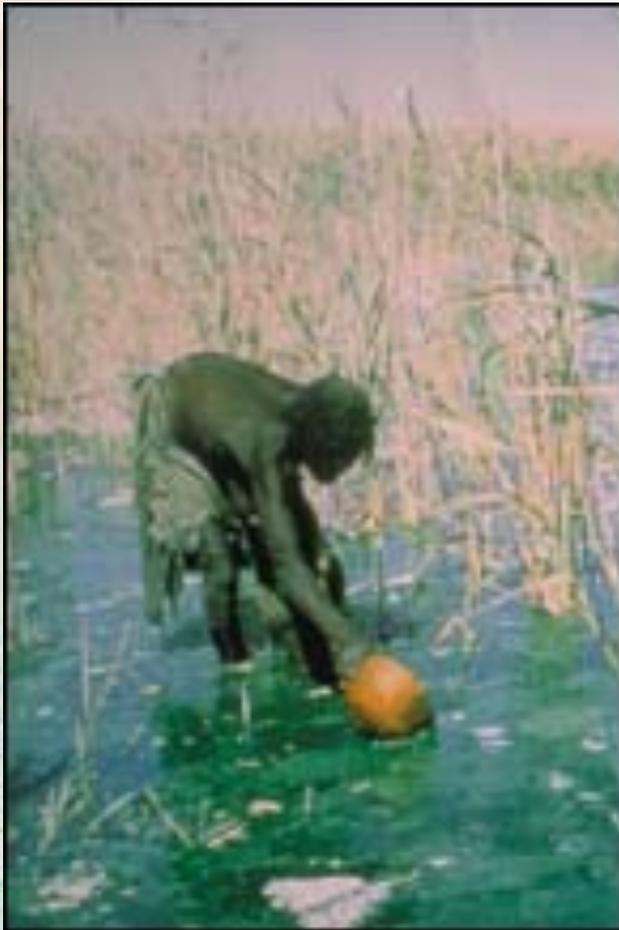
Early Spirulina Consumers: Aztecs & Mayans

**Aztecs called it
tecuitlal**



Aztec Spirulina Harvest

Still grows in the wild in Chad



Harvest in Lake Chad



Spirulina Cakes for Sale

*Spirulina grows naturally in a few
alkaline lakes around the world*

Original Commercialization



Lake Tezcuco, Mexico, mid 1970's

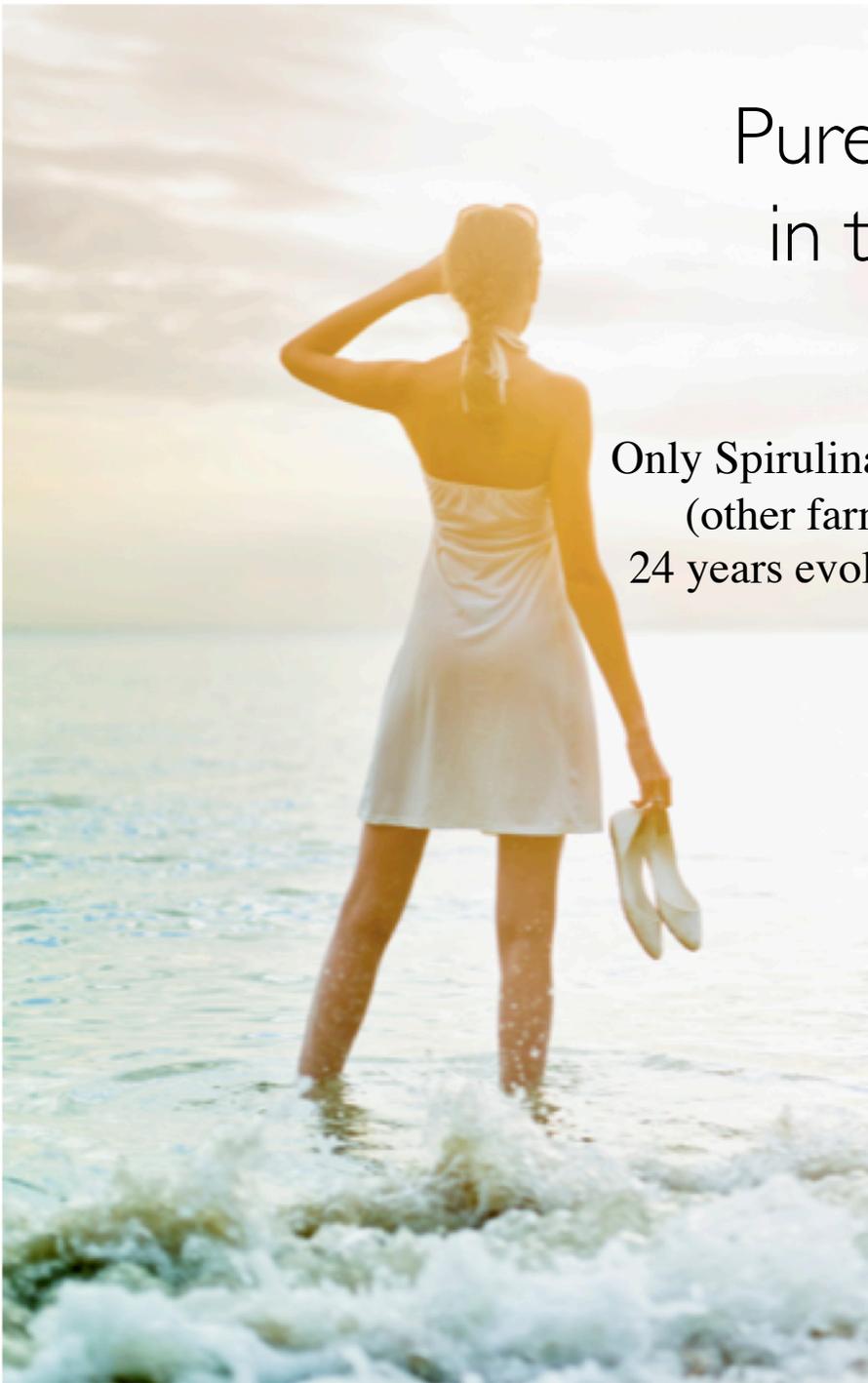
The Fall of Lake Tezcucuo

- Horrible quality: Heavy metals, bacterial load
- Over-run by sprawling Mexico City
- Naturally harvested microalgae subject to contamination and agricultural runoff
- Led to the emergence of Cyanotech and Earthrise



Pure cultured Spirulina thrives in the brilliant Hawaiian Sun

Only Spirulina farm in the world to have “continuous cultivation”
(other farms must shut down for 3 – 4 months every year)
24 years evolving into a superior strain in the hot, Hawaiian sun



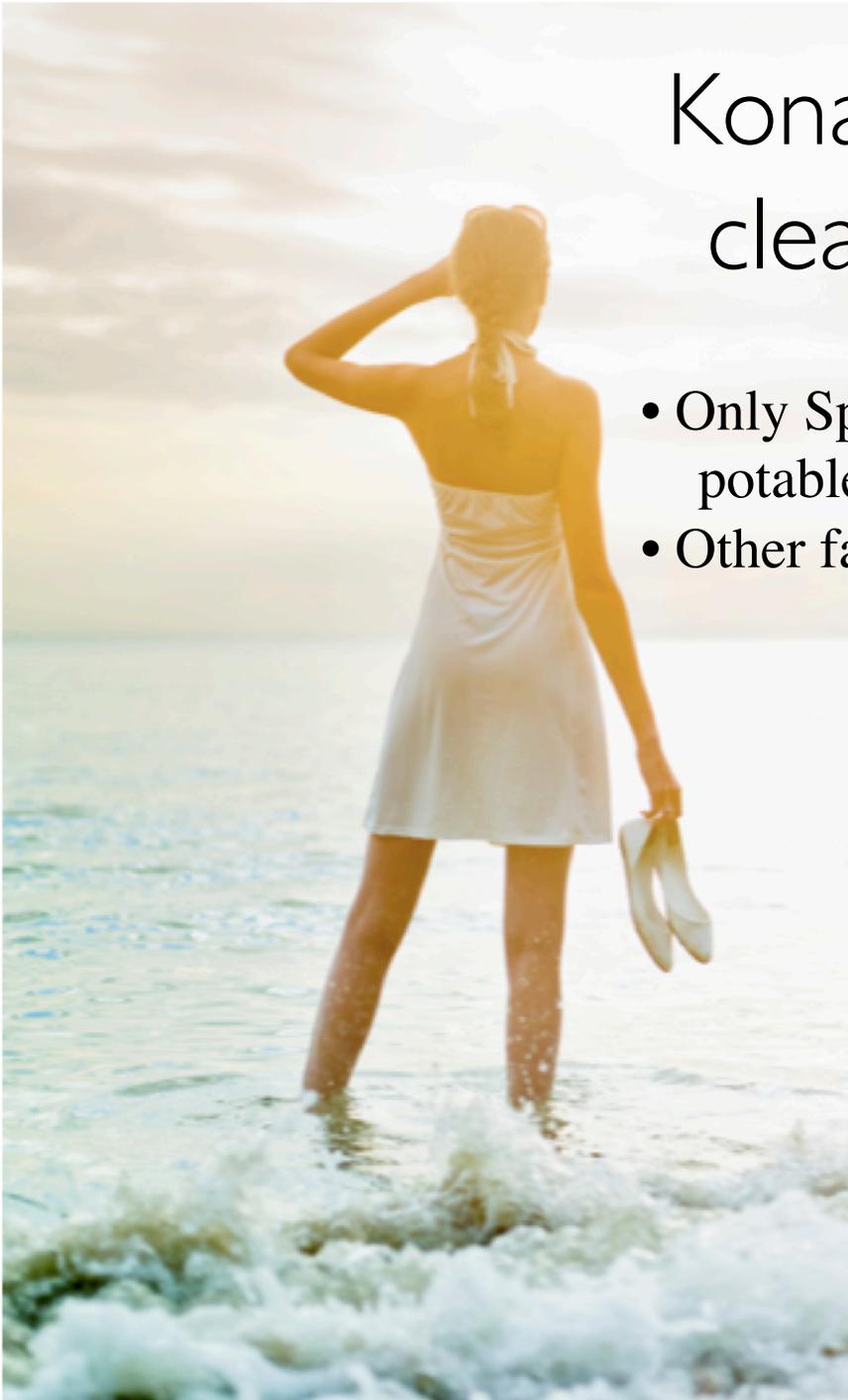
A clean environment for pure Hawaiian Spirulina



Algae is very absorptive: Hawaiian Spirulina has less than 0.2 ppm lead.
Some Spirulina products and different food items have over 5.0 ppm.

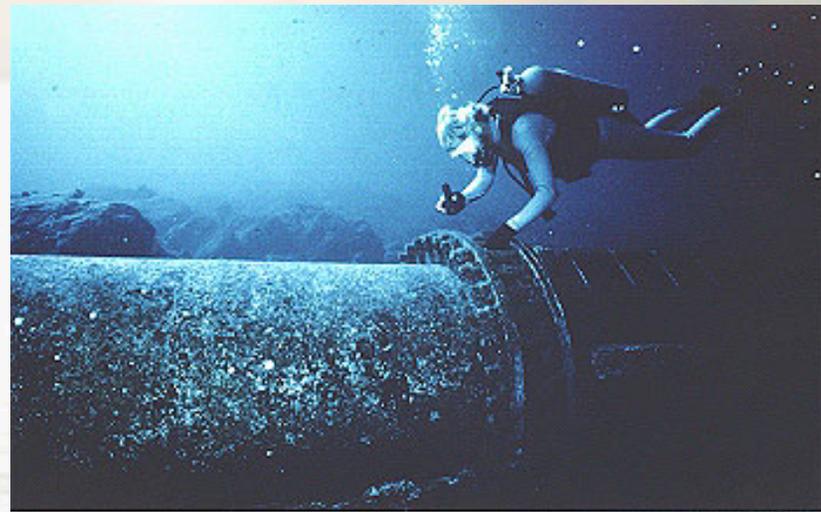
Kona, Hawaii is blessed with clean water and clear skies

- Only Spirulina farm in the world to use only 100% potable, municipal water and deep sea water
- Other farms use river water or irrigation water



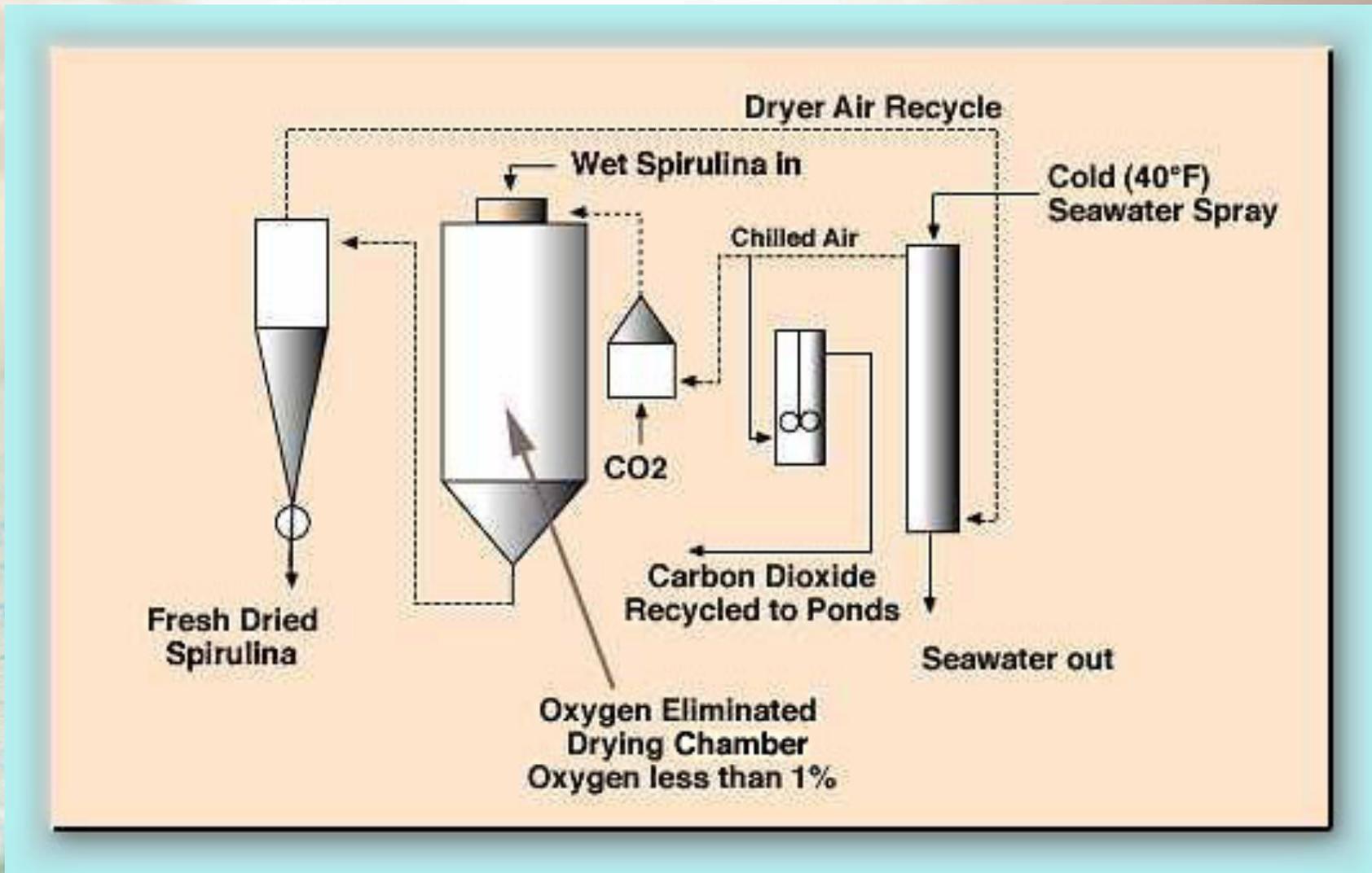
Water Sources of Hawaiian Spirulina

1. Sea Source: Gandalf Hawaiian Spirulina is the only micro-algae grown using seawater drawn from a depth of 600 meters
2. Land Source: Gandalf Hawaiian Spirulina also uses municipal drinking water from deep within the Hawaiian aquifer



94 different minerals from the deep sea water make Gandalf Hawaiian Spirulina superior to other brands

Ocean Chill™ drying prevents oxidation of key nutrients



Low oxygen levels (< 1%) are essential to preserve key nutrients

Quality Control department:
15 different quality tests for
each lot of Hawaiian
Spirulina



A woman in a white dress stands on a beach at sunset, looking out at the ocean. The sky is filled with soft, golden light, and the waves are gentle and white. The woman is in the foreground, slightly to the left, with her back to the camera. The ocean stretches to the horizon under a cloudy sky.

Gandalf Hawaiian Spirulina: The Best in the World

- Only Spirulina grown in America is considered GRAS (Generally Recognized As Safe) by the US FDA. Other brands do not meet the safety and quality standards necessary for GRAS status
- Lowest levels of heavy metals and contaminants
- Highest levels of key nutrients

Purity



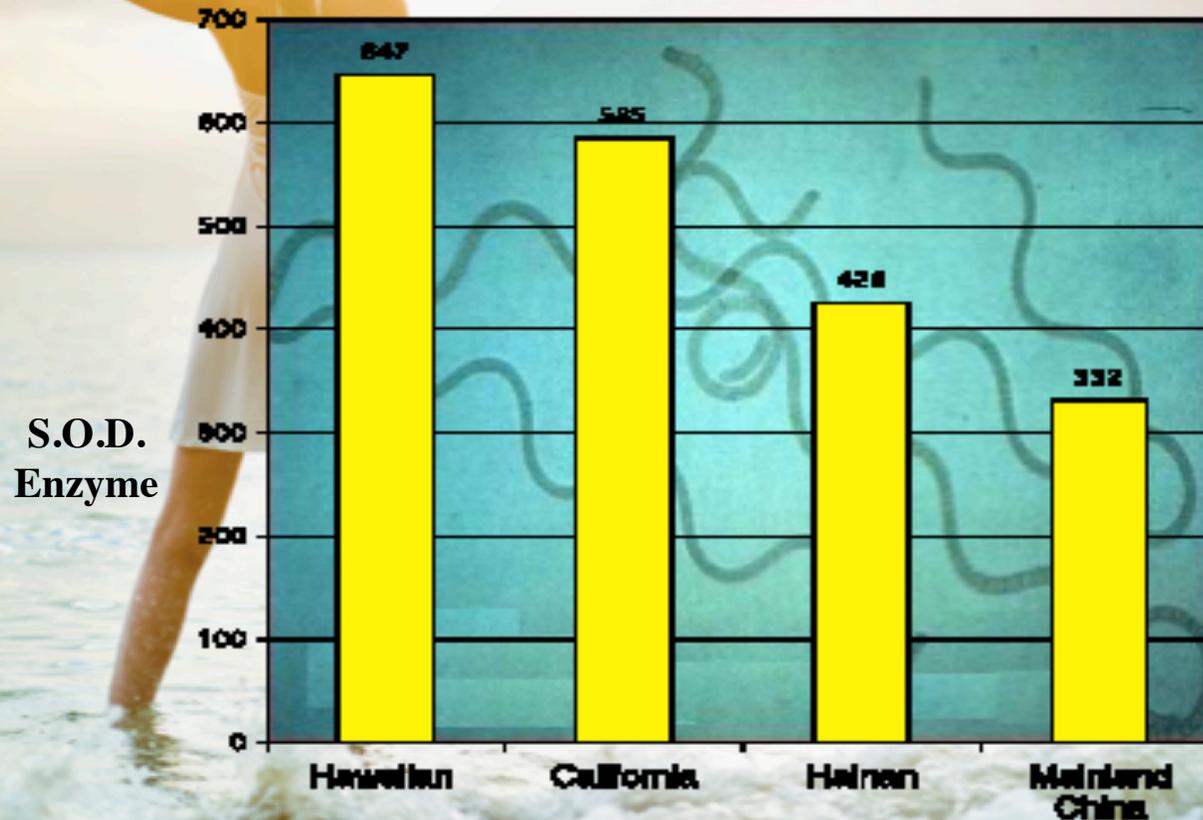
- Four definitive markers for purity
 - Lead < 0.2 ppm
 - Mercury < 0.025 ppm
 - Cadmium < 0.2 ppm
 - Arsenic < 0.5 ppm

A woman in a white dress stands on a beach at sunset, looking out at the ocean. The scene is bathed in the warm, golden light of the setting sun, with waves crashing onto the shore in the foreground. The woman is positioned on the left side of the frame, her back to the camera as she gazes across the water towards the horizon. The sky is filled with soft, wispy clouds, and the overall atmosphere is serene and peaceful.

California Proposition #65

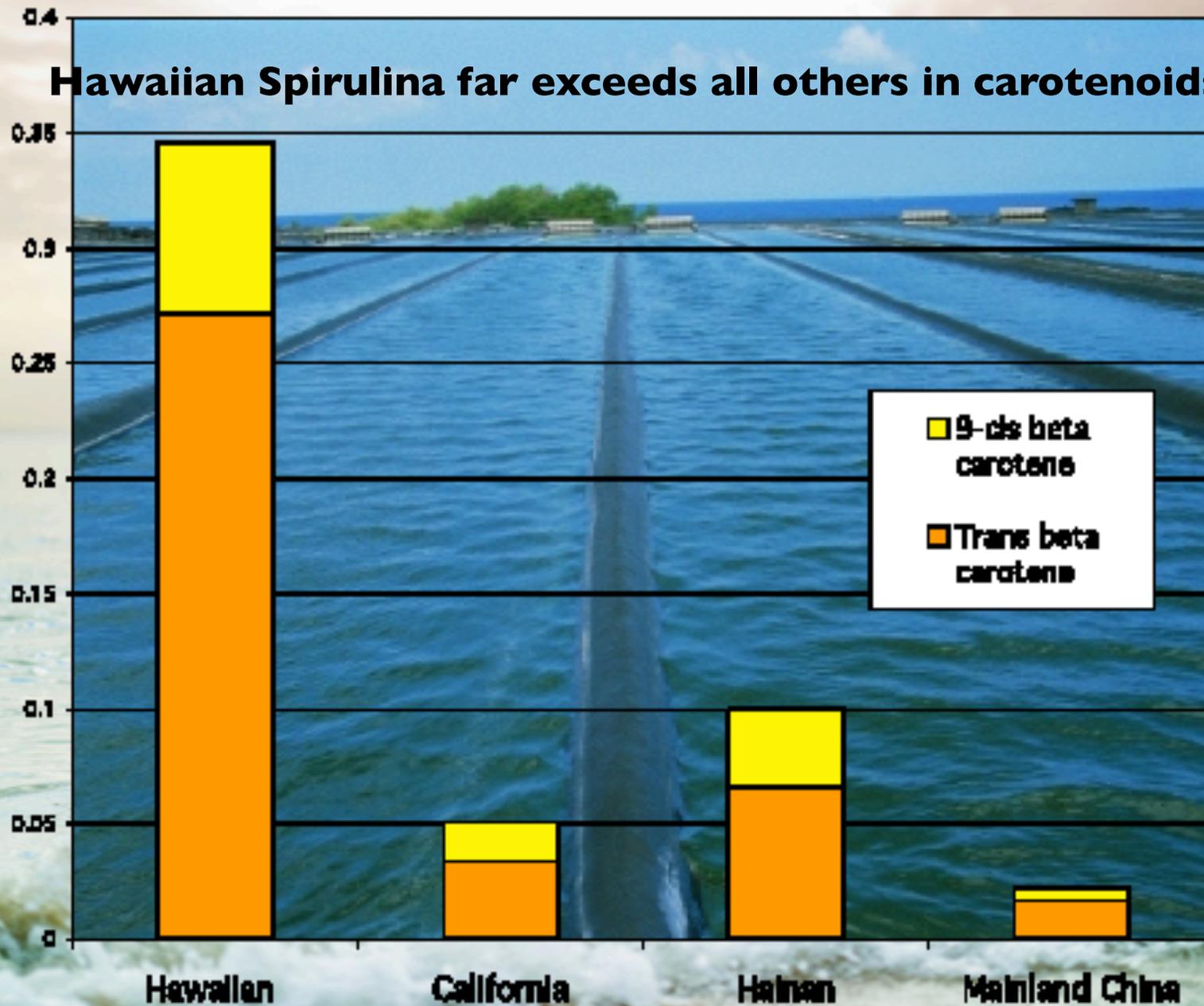
- One of the world's most rigorous laws for lead levels
- Daily serving must contain lead at less than 0.5×10^{-6} grams
- Most Spirulina brands fail at a daily serving of one gram per day
- Hawaiian Spirulina easily passes at daily serving of three grams per day

Ocean Chill™ Drying gives Hawaiian Spirulina Superior Enzyme Levels



Enzyme levels are a measure of freshness and antioxidant strength

Hawaiian Spirulina far exceeds all others in carotenoids



OPTIMUM PROTECTION

Light & oxygen resistant packaging



400 mg V-caps



Fine powder



1000 mg – Tabs

Gandalf Spirulina

Gold Standard

15-point Checklist

1. Lead levels less than 0.2 parts per million
2. Mercury levels less than 0.025 parts per million
3. Cadmium levels less than 0.2 parts per million
4. Beta carotene levels greater than 2000 mg per kg
5. Total carotenoid levels greater than 4200 mg per kg
6. Highest levels of enzymes including the powerful antioxidant SOD
7. Contains enzymes not found in other Spirulina brands
8. Total Phycocyanin levels >11%; c-Phycocyanin >5%
9. Contains 94 trace minerals from 2000 ft. deep ocean water
10. High quality drinking water from the Hawaiian aquifer
11. Certified Pesticide and Herbicide free
12. Guaranteed GMO free and non-irradiated
13. ISO 9001:2000 Certified Quality Management
14. Produced using current Good Manufacturing Practices (GMP)
15. Generally Recognized as Safe (GRAS) by the US FDA for all food, beverage and supplement applications

A woman in a white dress stands on a beach, looking out at the ocean under a sunset sky. The text is overlaid on the image.

Why do we need to supplement with Gandalf Hawaiian Spirulina?

Nutrition experts and the United States Government recommend that we eat 9 servings of different fruits and vegetables each day

3 grams of Hawaiian Spirulina have the same amount of phytonutrients as 5 servings of fruits and vegetables

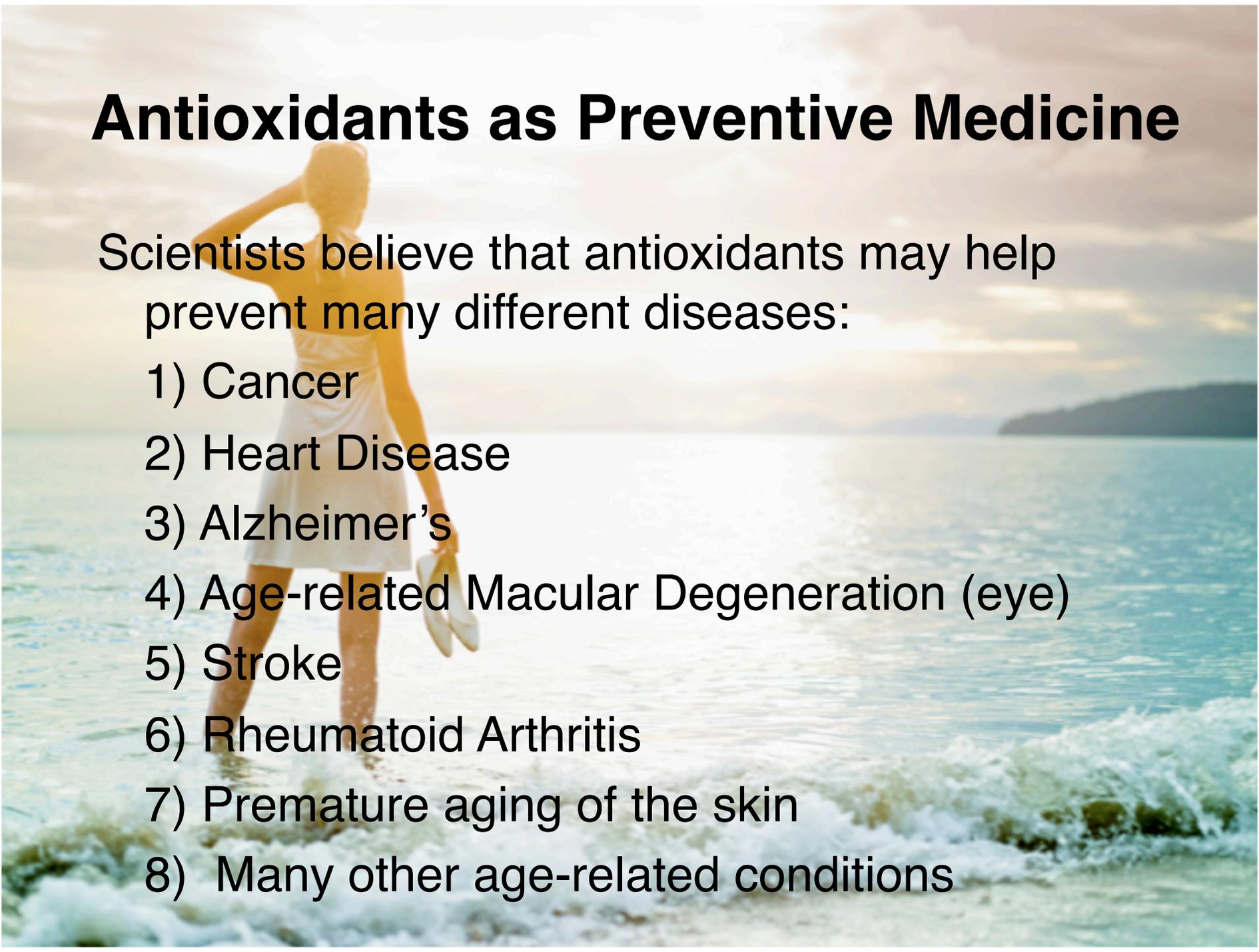


SPIRULINE™
GANDALF
SPIRULINA

Oxidation and Free-Radical Damage

- Causes damage to DNA and cell structures
- Caused by pollution, cigarette smoke, sunburn, radiation, exercise, even immune function
- Leads to aging and degenerative diseases
- Hawaiian Spirulina is exceptionally rich in antioxidants that neutralize free-radicals

Antioxidants as Preventive Medicine

A woman in a white dress stands on a beach at sunset, looking out at the ocean. The scene is bathed in the warm, golden light of the setting sun, with waves crashing on the shore in the foreground. The woman is seen from behind, her hand raised to her head, suggesting a moment of reflection or contemplation.

Scientists believe that antioxidants may help prevent many different diseases:

- 1) Cancer
- 2) Heart Disease
- 3) Alzheimer's
- 4) Age-related Macular Degeneration (eye)
- 5) Stroke
- 6) Rheumatoid Arthritis
- 7) Premature aging of the skin
- 8) Many other age-related conditions



Gandalf Hawaiian Spirulina supplies a wave of vital antioxidants (shown in actual colors)

- Phycocyanin (antioxidant for liver and kidney health, very hard to find in foods)
- Chlorophyll (anti-toxin, anti-carcinogen)
- Zeaxanthin (antioxidant for the eyes and brain)
- Beta carotene (antioxidant for skin, eyes, immune system, safe source of vitamin A)

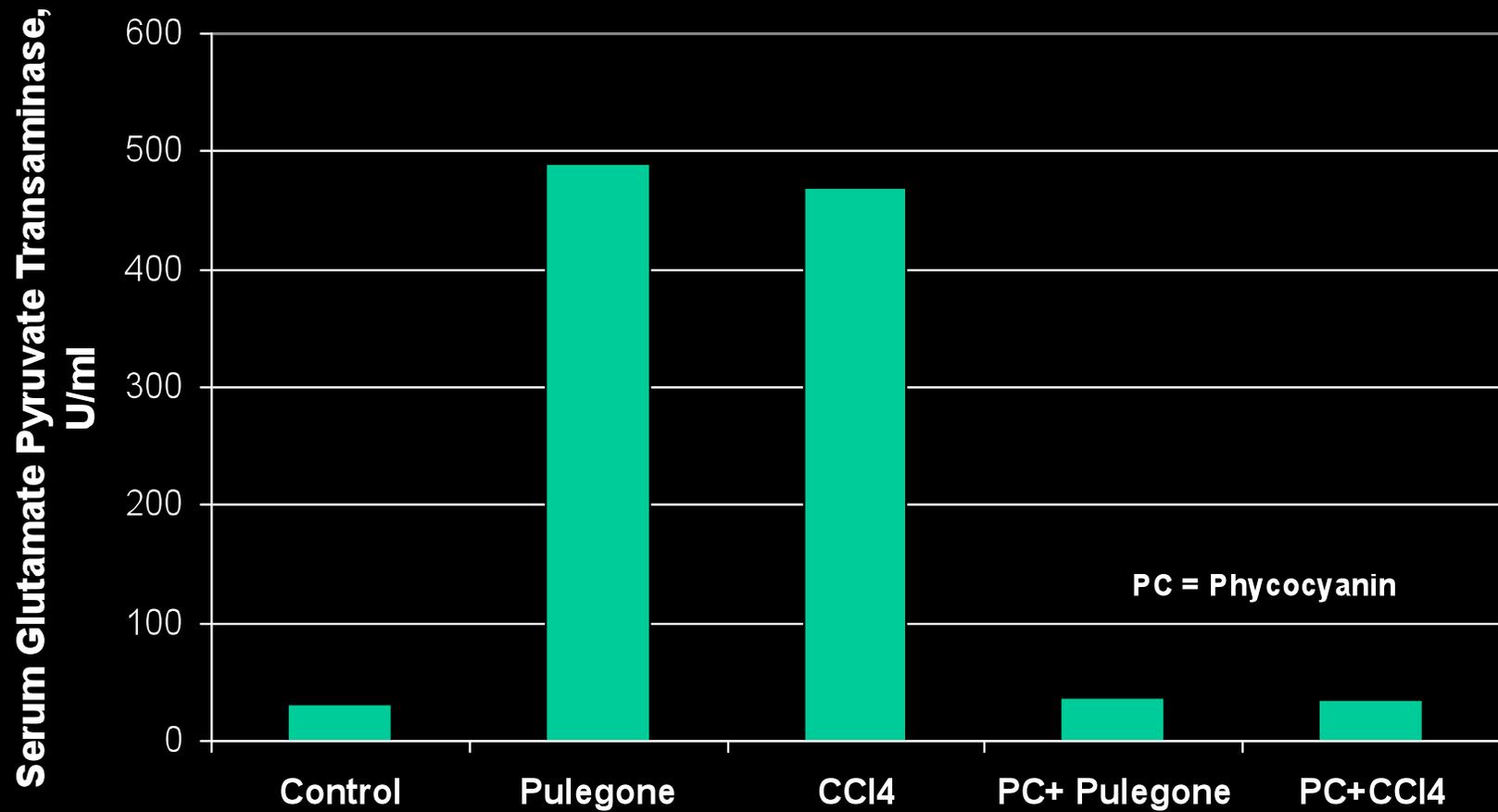
A woman in a white dress stands on a beach, looking out at the ocean under a sunset sky. The scene is serene and captures the beauty of a coastal sunset.

C-Phycocyanin

(pigment from light harvesting phycobiliprotein family)

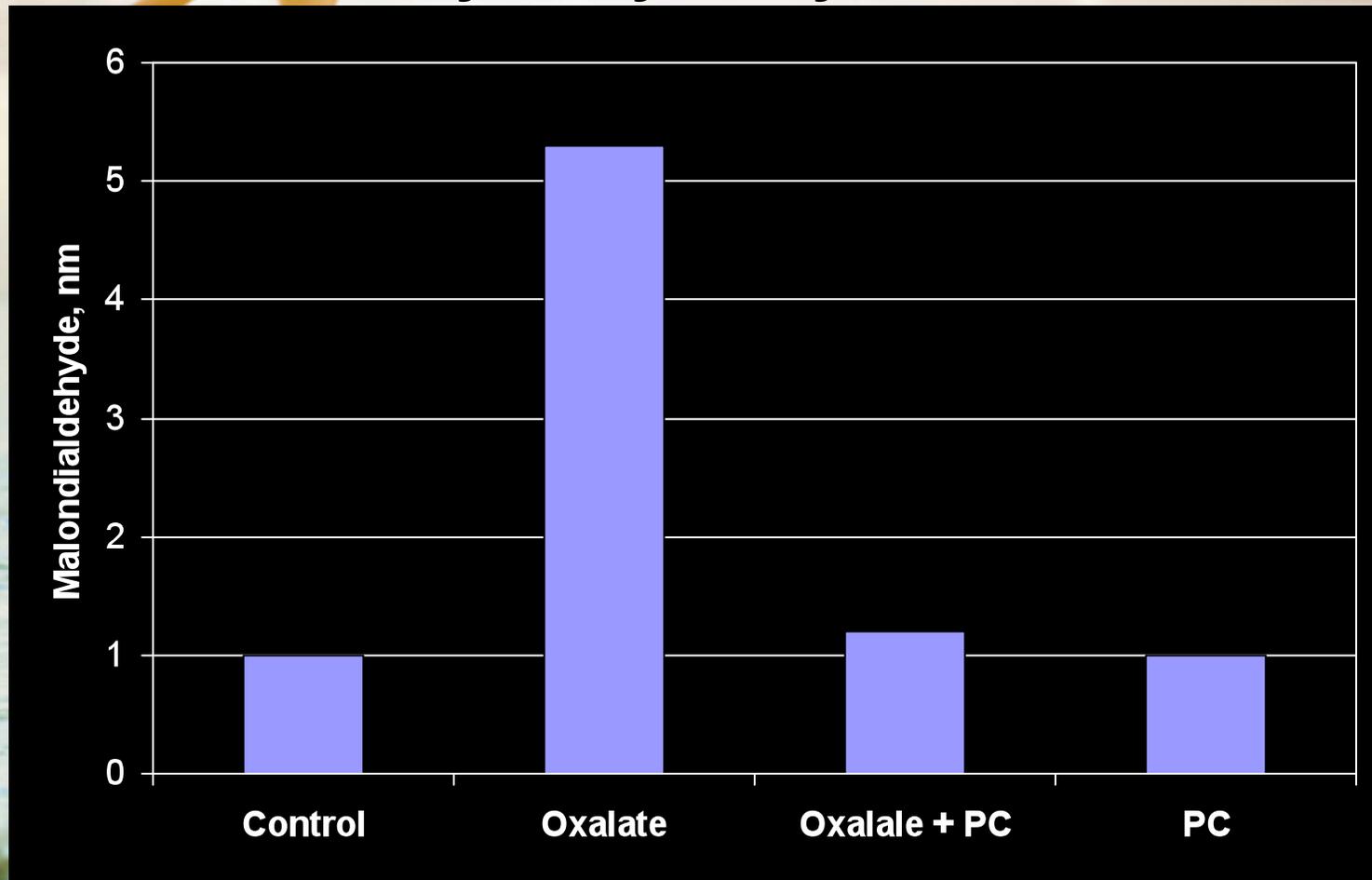
- Potent free radical scavenger, Pinero et al, 2001
- Hepatoprotective (Liver), Vadiraja et al, 1998; Gorban et al, 2000
- Protection against renal damage (kidney), Farooq et al 2005
- Neuroprotective (brain), Romay et al 2003

Hepatoprotective Effect of Phycocyanin



Vadiraja, et al 1998

Inhibition of Induced Kidney Damage by Phycocyanin



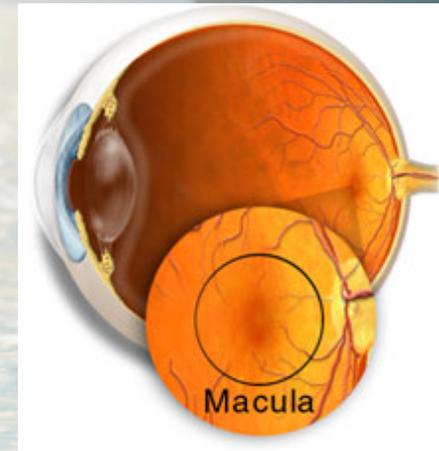
Farooq et al 2005

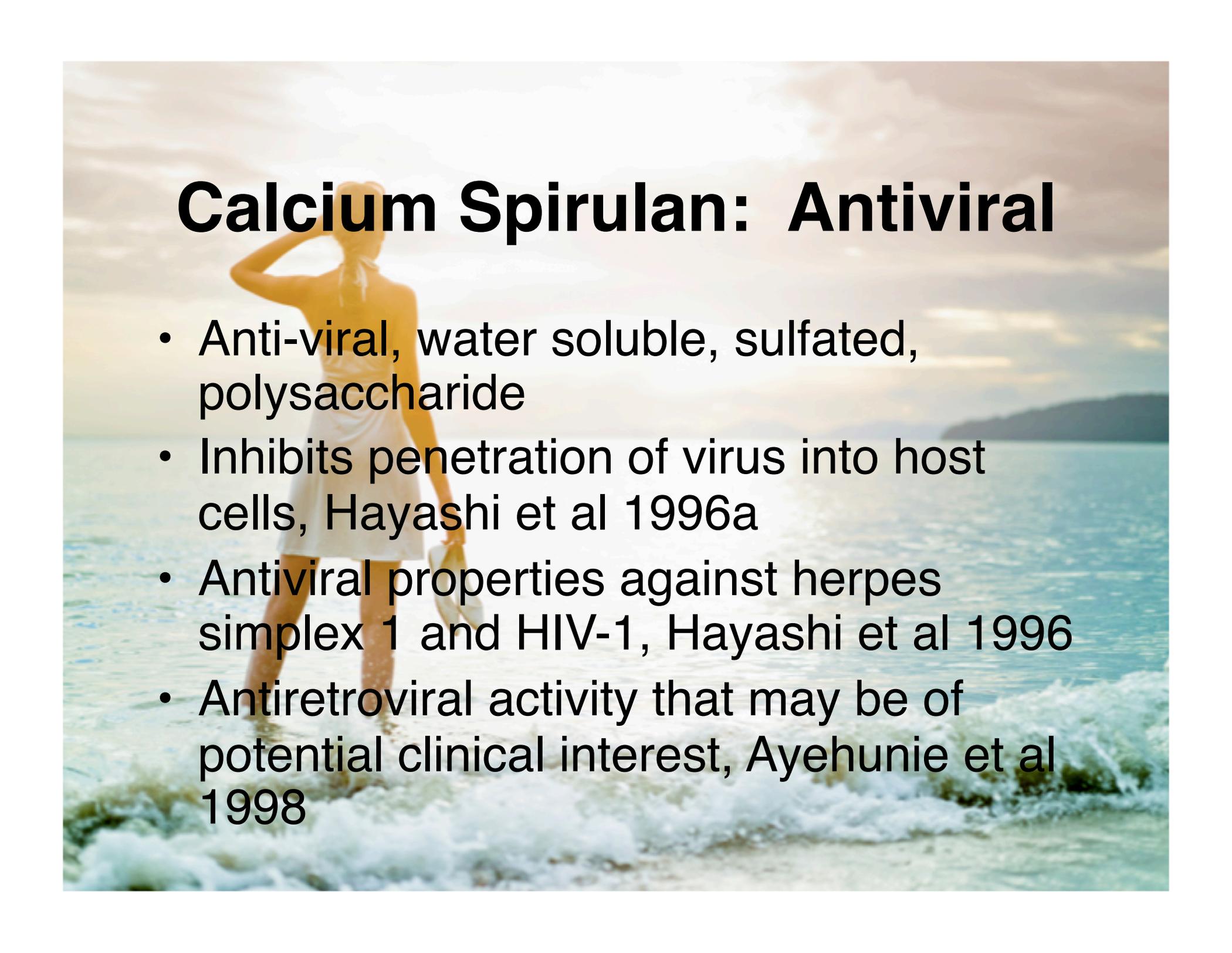
Zeaxanthin protects our eyes as we age



- The leading cause of blindness in older adults is called macular degeneration (AMD).
- Foods rich in Zeaxanthin help prevent AMD.

Just 6 tablets provide the amount of zeaxanthin in a bowl of spinach, one of the richest vegetable sources.



A woman in a white dress stands on a beach at sunset, looking out at the ocean. The sky is filled with soft, golden light, and the waves are gently crashing onto the shore. The woman is positioned in the center-left of the frame, with her back to the camera. She is wearing a white, sleeveless dress and has her hair tied back. Her right hand is raised to her forehead, and her left hand is holding a white object, possibly a hat or a bag. The overall mood is serene and peaceful.

Calcium Spirulan: Antiviral

- Anti-viral, water soluble, sulfated, polysaccharide
- Inhibits penetration of virus into host cells, Hayashi et al 1996a
- Antiviral properties against herpes simplex 1 and HIV-1, Hayashi et al 1996
- Antiretroviral activity that may be of potential clinical interest, Ayehunie et al 1998

Antiviral Activity and Cytotoxicity of Spirulina Calcium Spirulan (Hayashi et al 1994)

Viruses	Host Cell	Cytotoxicity ID50, $\mu\text{g/ml}$	Antiviral Activity ED50, $\mu\text{g/ml}$	Therapeutic Factor ID50/ ED50
Herpes simplex I	HeLa	>5,000	3.9	>1280
Measles virus	Vero	>5,000	3.8	>1310
Mumps virus	Vero	>5,000	11	>450
Influenza Virus	MDCK	>5,000	87	>57

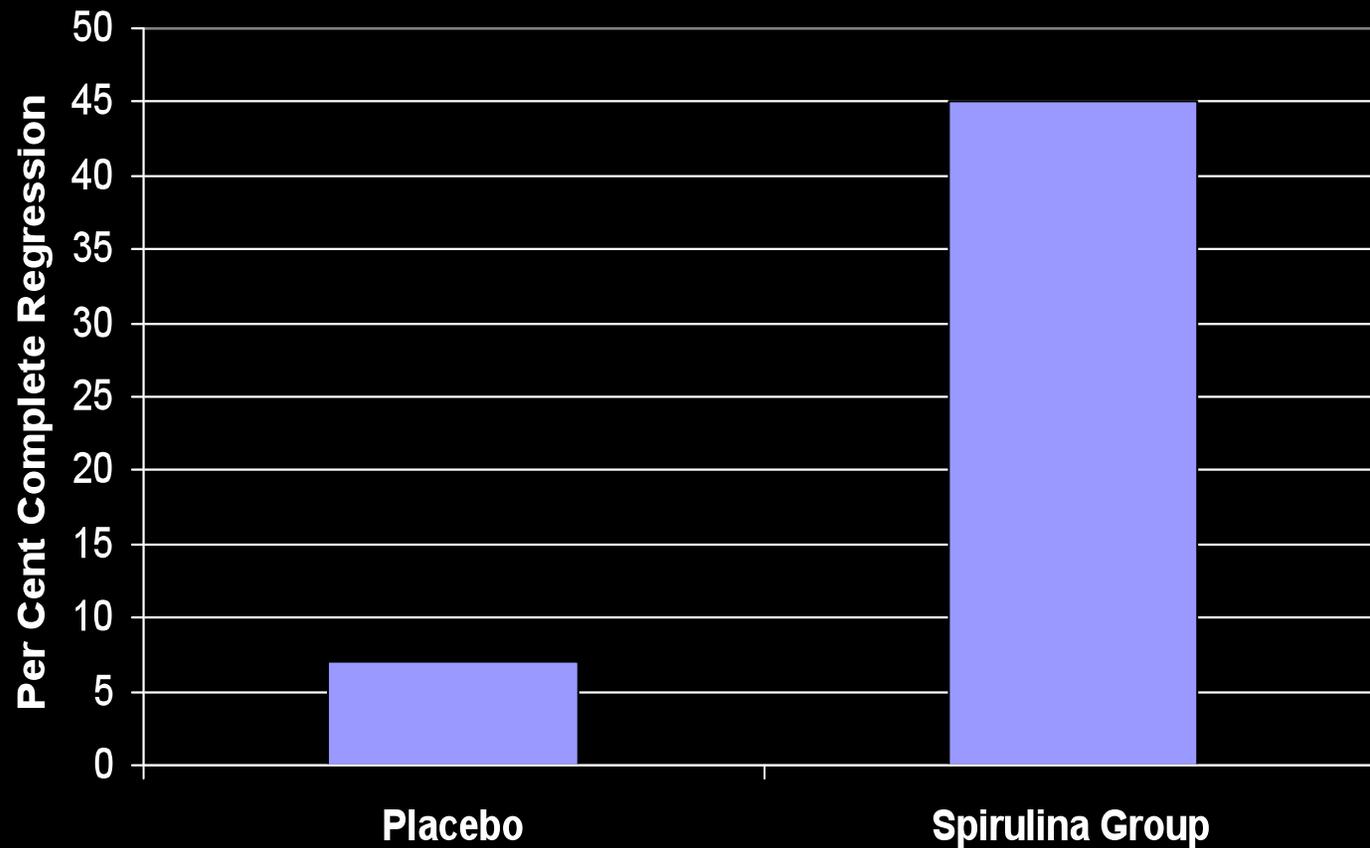
Melanin Polysaccharide

- Hot aqueous-alcohol extract, combination melanin and polysaccharide
- Potent immunostimulatory activity—100 to 1,000 times more active in vitro monocyte activation than currently used immunotherapy polysaccharides, Pugh et al, 2001
- Potentially useful botanical or pharmaceutical to improve immune function, Pasco et al, 2006

Chemo-Preventative

Reduction in Pre-Cancerous Oral Lesions in Tobacco Chewers

Consumption of 1 gram/day of Spirulina for 12 months, Mathew et al 1995



Relief for the Common Cold

A woman in a white dress stands in the ocean waves at sunset. She is holding a pair of white shoes in her left hand and has her right hand on her head. The background shows a calm sea and a hazy sky with soft light from the setting sun.

Protective effect on
sufferers of allergic
rhinitis — reduced cytokine
Interleukin-4, Mao, et al,
2005

A woman in a white dress stands on a beach, looking out at the ocean under a sunset sky. The scene is serene and peaceful, with waves crashing on the shore in the foreground.

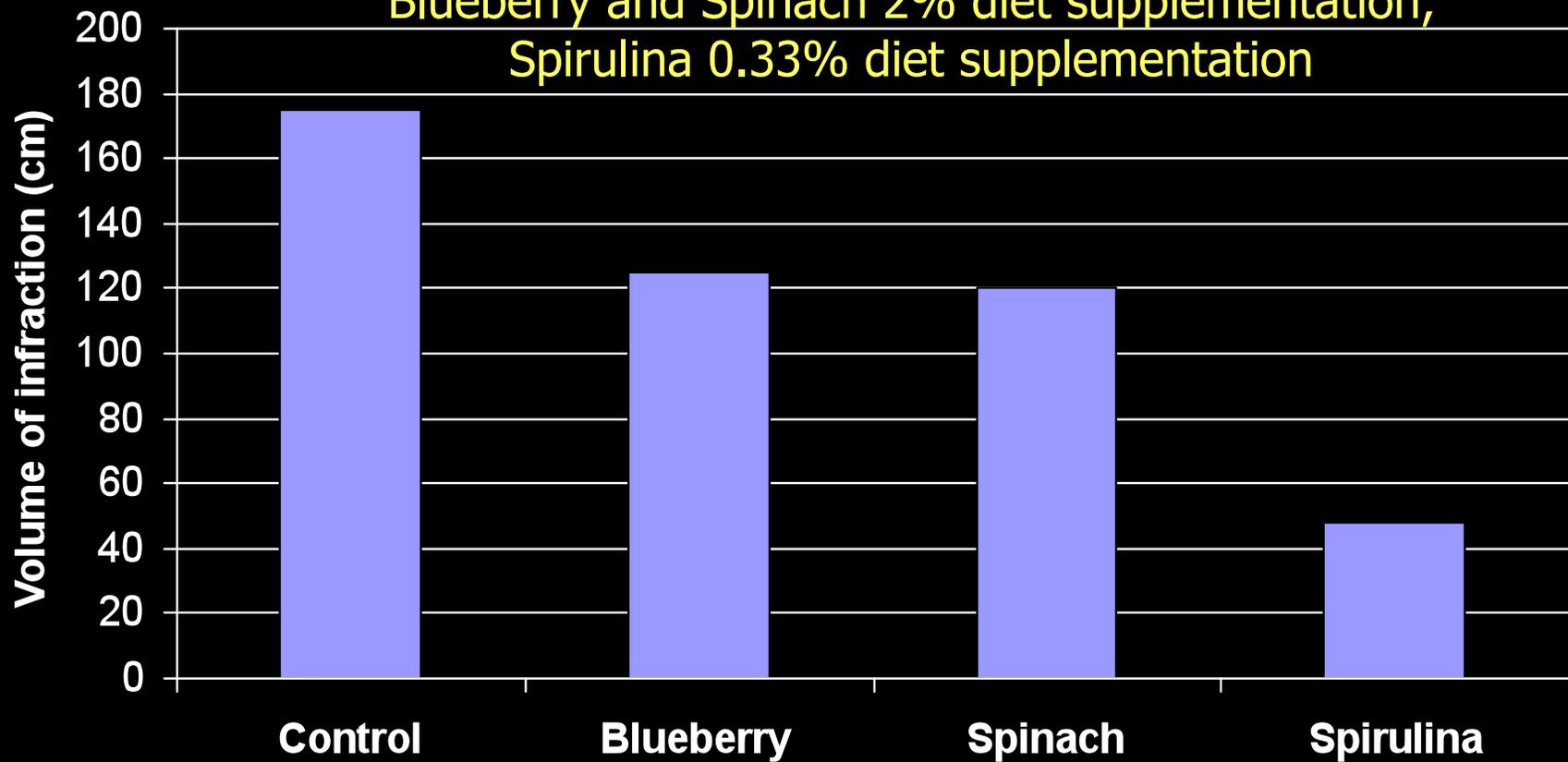
Brain Health

- Reduced age related brain degradation and reduced pro-inflammatory cytokines, (Gemma et al, 2002)
- Neuroprotective—reduced ischemic brain damage & improved post-stroke locomotor activity, (Wang et al 2005)

Ischemic Brain Damage

(Wang et al 2005)

Blueberry and Spinach 2% diet supplementation,
Spirulina 0.33% diet supplementation



Unique Potential Health Benefits of Spirulina

A woman in a white dress stands on a beach at sunset, holding her shoes. The background shows the ocean and a cloudy sky.

- Strong Synergistic Antioxidants
 - Cancer
 - Aging
- Hepatoprotective
- Renal Protective
- Anti-viral
- Immunostimulatory

A woman in a white dress stands in shallow ocean waves at sunset. The sky is filled with soft, golden light and scattered clouds. The water is a vibrant blue-green, with white foam from the waves in the foreground. The woman is seen from the back, her right hand raised to her forehead as if shielding her eyes from the sun. The overall mood is serene and peaceful.

Medical Research on Spirulina

Over **200 scientific studies** have been done showing potential health benefits of Spirulina

Major Publicity: World's Largest Circulation Magazine



5

Foods That Can Add Years to Your Life

New research suggests that including a combination of antioxidants on your plate yields a more powerful advantage than eating any one type of antioxidant food alone. Try to make the following food groups a part of your daily diet.



1. Spirulina (blue-green algae) Spirulina contains not only the antioxidant phyco-cyanin but also a bundle of protein, plus omega fatty acids. Once a mainstay food of the Aztecs, spirulina additionally works as an ibuprofenlike nonsteroidal anti-inflammatory. Add one teaspoon to one tablespoon of spirulina a day to smoothies or yogurt, or take it in capsule form. Caution: for some people, spirulina can be overstimulating (kind of like too much coffee), so experiment to find the right balance.

2. Cranberries, blueberries, blackberries These are jam-packed with antioxidants



called anthocyanins and polyphenols, which also have anti-inflammatory qualities. Try to work in a cup of berries a day.

3. Leafy greens (such as kale or spinach) They're full of lutein, another super-antioxidant; it's been proven to protect against macular degeneration of the optic nerves, thus protecting eyesight. Nutritionists suggest eating a cup of cooked kale or one to two cups of raw spinach each day.

4. Almonds and walnuts These nuts are a fantastic source of omega-6 fatty acids, as well as phytosterols (plant sterols) and vitamin E (tocopherols). People who



regularly consume nuts tend to have both a lowered risk of Parkinson's and lower cholesterol. Work in a quarter cup of these nuts a day whenever you can.

5. Flaxseed It contains fiber and omega-3 fatty acids that help to clear plaque and bad fats from the cardiovascular system. The fiber also protects against colon cancer. For best results, buy flaxseed ground (or grind it yourself) and throw one teaspoon to one tablespoon a day into everything from meat loaf to muffins.

Finally, don't forget to add these superfoods into a diet rich with lean meat, fish, and whole grains. —D.J.N.



Mahalo (thank you) for
your attention



A woman in a white dress stands on a beach at sunset, holding a pair of shoes. The background shows the ocean and a cloudy sky with a warm, golden light.

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