

Scientific Discoveries that Break the Neck of the Pharmaceutical Cartel

Over the past century, the investment groups behind the pharmaceutical industry developed this industry into one of the largest and most profitable investment businesses, only surpassed by the banking business.

There is only one caveat: It's a multi-billion-dollar fraud business. This industry promises health to the people – yet its entire existence is based on the continuation of diseases. To mask this unsolvable conflict, the architects of this investment fraud spent more than one third of their money in false advertisements deceiving the people around the world and – in direct contrast to the deadly nature of their business – dress as “Mother Theresa”.

Now that this fraud has been unmasked and is being documented in this book, the people of the world have the chance to rid themselves of this unscrupulous business with disease.

Equally important is the fact that the scientific and medical alternatives to the “pharma-fraud” are already available. Unmasking the century-long criminal business of the drug cartel and largely replacing it with effective and safe natural health alternatives are two sides of the same medal. These two elements form the basis of a new health care system, providing effective and affordable health to the people of the world.

The following pages document the breakthroughs in natural health for the greatest health threats and the major causes of death of our time; namely

- cardiovascular disease,
- cancer and
- immune deficiencies / AIDS.

When you read these pages, you should keep in mind that the elimination of every one of them inevitably means the loss of a multi-billion dollar market in patented drugs currently marketed by the network of “organized crime” of the drug cartel.

For example: The reduction of heart attacks and stroke by 90% over the next two decades – a goal easily reachable by applying cellular medicine – will destroy the global drug markets for cholesterol lowering drugs, beta-blockers, calcium-blockers, ACE-inhibitors and other drugs that merely address the symptoms of heart disease. These markets for patented cardiovascular drugs are the single largest segment of the global pharmaceutical business and amount to more than 300 billion dollars in sales annually. If cardiovascular diseases are largely eliminated, the architects of the pharma fraud lose these sales not just for one year, but for ever.

Similarly, the elimination of cancer as a major drug market would take away an estimated two trillion dollars from the drug cartel.

The most devastating loss, however, will be the AIDS business in the developing world. This business is a multiple fraud: with only a fraction of the AIDS patients being HIV-positive it is obvious that there must be other causes of AIDS including malnutrition. Promoting toxic anti-retroviral (ARV) drugs – all of them derivatives of deadly chemo-cancer-drugs – to people who have no other ailment than carrying antibodies against HIV in their blood, is a crime. The only sure way to produce the actual immune deficiency disease with fever, ulcers and more infections,



is to destroy their immune system with chemical agents like ARVs.

To make the poor governments of Africa pay billions of dollars for importing toxic drugs – that allegedly fight immune deficiencies, but in reality do actually cause them – ruins the economies of these poor countries further and keeps entire continents in dependency of pharmaceutical colonialism.

The encouraging report, that micronutrients can help in many cases to reverse even advanced symptoms of AIDS, is the beginning of the end of this particularly malicious branch of the pharmaceutical genocide.

I feel privileged to have contributed with my scientific discoveries to these important advances for human health.

As you can imagine, the stakeholders of the drug cartel are doing everything to block this information from reaching you. Unable to fight them on scientific grounds, they resort to legal and regulatory tricks and public defamation.

But no army in the world can stop a cause whose time has come.

Breakthrough in Cardiovascular Health

The Lecture at Stanford Medical School

On May 4, 2002, I was privileged to give a lecture at a symposium on nutrition at Stanford Medical School in Palo Alto, California, one of the world's leading medical universities.

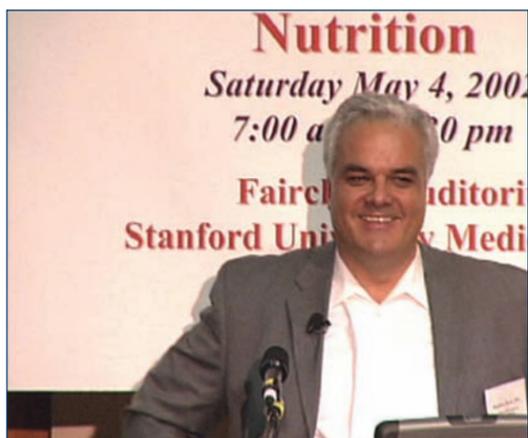


For more than 100 years, this medical institution has gracefully served the interests of the pharmaceutical cartel by promoting its multi-billion dollar business with heart disease.

For more than a decade, the pharmaceutical cartel has vigorously fought my discovery of the scurvy-heart disease connection, realizing that it threatens the very basis of this business. In that fight, they have also abused many medical opinion leaders.

Now, the growing acceptance of the scurvy-heart disease connection can no longer be ignored. My lecture at Stanford University was a historic event because it broke the stranglehold of the pharmaceutical cartel on established medical institutions. The doctors who organized the event deserve some credit for opening these closely guarded gates of medicine.

Twenty minutes of my lecture felt like an earthquake to the house of cards of pharmaceutical-based cardiology. With this lecture, Cellular Medicine opened the doors for new generations of doctors, empowering them to eradicate heart disease and save millions of lives.



Delivering my lecture at Stanford University

The Scurvy-Heart Disease Connection: Solution to the Puzzle of Cardiovascular Disease

I would like to congratulate Stanford University for addressing the need for preventive and natural answers to the number one cause of death in the industrialized world. I will present to you the facts that atherosclerosis, heart attacks and strokes are not diseases, but the direct result of long-term vitamin deficiency. And, therefore, they can be prevented by natural means, without pharmaceutical drugs or surgical intervention.

Current Hypotheses for Atherosclerosis Can Explain Peripheral Vascular Disease But Not Coronary Artery Disease

Researchers:	Hypothesis:
Goldstein & Brown	Hypercholesterolemia
Steinberg	Oxidized LDL
Ross	Response to Injury
Libby	Inflammation

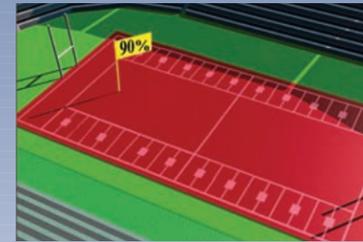
Heart disease is an early form of the sailor's disease scurvy. In my presentation, I can only focus on the most compelling evidence. For more details, I encourage you to visit our research website www.dr-rath-research.org.

All existing hypotheses of atherogenesis have one problem in common – they defy human logic. If high cholesterol levels, oxidized LDL or bacteria damage the vascular wall, atherosclerotic plaques would occur along the entire vascular pipeline. Inevitably, peripheral vascular disease would be the primary manifestation of cardiovascular disease. This is clearly not the case.

It doesn't require a degree from Stanford or any other medical school – any layperson can solve the "Football Field Riddle."

The arteries, veins and capillaries in our bodies compose a pipeline that is 60,000 miles long and covers the area of a football field. But this pipeline fails in 90% of the cases at one specific spot: the coronary arteries, which are the

The "Football Field Riddle"



The total surface area of the blood vessel system in a person is comparable to the size of a football field.

But in 90% of the cases, it clogs in the same small spot — the size of the marker for the "extra point" kick.

length of only one billionth of the total vascular pipeline. If high cholesterol — or any other risk factor circulating in the bloodstream — could cause damage to this pipeline, it would clog everywhere, not just at one spot. Obviously, elevated cholesterol cannot be the primary cause of coronary artery disease.

The solution to the puzzle of cardiovascular disease, therefore, must lie in the explanation of coronary artery plaques as the predominant manifestation of cardiovascular disease. To solve this puzzle, we need to refocus our attention away from the bloodstream and its constituents to the one and only relevant target: the stability of the vascular wall.

The following picture shows the connection between cardiovascular disease and the sailor's disease scurvy. Unlike animals, the human body cannot synthesize vitamin C. Ascorbate

The "Scurvy-Heart Disease Connection"



Cardiovascular disease is an early form of the sailor's disease scurvy. In both cases, lack of vitamin C in the vascular cells is the underlying problem.

In scurvy, a complete depletion of ascorbate in the body dissolves the structure of the blood vessel wall causing leaks, blood loss, and eventually death.

In cardiovascular disease, ascorbate deficiency gradually develops over decades, allowing time for vascular repair mechanisms (plaque formation).

deficiency results in two distinct morphological changes in the vascular wall: impaired vascular stability due to decreased collagen synthesis and loss of the endothelial barrier function.

The sailors of earlier centuries died within a few months from hemorrhagic blood loss due to a lack of endogenous ascorbate synthesis combined with a vitamin-deficient diet. When the Indians gave those sailors tea from tree barks and other vitamin-rich nutrition, blood loss was stopped and the vascular wall healed naturally. Thus, the damage was repaired!

Today, we all get *some* vitamin C in the diet, and open scurvy is rare. But it is not enough, and almost everyone suffers from chronic vitamin deficiency. Over decades, microscopic lesions develop along the vascular wall, especially in areas of high mechanical stress, such as the coronary arteries (pumping heart).

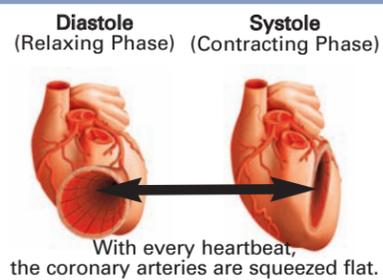
Just as in the sailor's disease scurvy, vitamin C induces the natural repair of the blood vessel wall in cardiovascular disease, leading to a halt in the progression and even to the natural regression of vascular lesions.

In contrast to current models of atherogenesis, the "Scurvy-Heart Disease Connection" answers all the key questions in cardiology today.

1. Why do we get infarctions of the heart and not of the nose or ears?

The answer can be reduced to two factors: structural impairment of the vascular wall due to vitamin deficiency combined with the mechanical stress from pulsatile blood flow in the coronary arteries. It is at this unique spot

Why People Get Heart Attacks, But Not "Nose Attacks"



Diastole (Relaxing Phase) **Systole** (Contracting Phase)

With every heartbeat, the coronary arteries are squeezed flat.

The underlying weakness of the blood vessel wall due to vitamin deficiency is primarily exposed at sites of extreme mechanical stress.

Due to the continuous heart pumping, the coronary arteries are the most stressed areas and the primary sites of vascular damage and repair (plaque formation).

where the underlying structural impairment is exposed first.

2. Why do we get arteriosclerosis, but not venosclerosis?

The hypothesis that cholesterol, bacterial infections, chlamydia and other blood risk factors cause plaques would inevitably also lead to clogging of veins and lead to *venosclerosis*. This is clearly not the case. The scurvy-heart disease connection provides the only logical answer to this question.

Why People Get Arteriosclerosis, But Not Venosclerosis

Arteriosclerosis Main Cause of Death	Venosclerosis Essentially unknown
	

Arteriosclerosis is the cause of every second death.

Venosclerosis is unknown unless a vein is implanted as an artery — such as in coronary bypass surgery. Then, veins, too, develop plaques.

This is logical proof that not cholesterol, but vascular wall weakness exposed by mechanical stress causes infarctions.

3. Why don't animals get heart attacks, but people do?

Why are bears and other hibernators with cholesterol levels of 600 mg/dl not extinct from an epidemic of heart attacks? The answer: Animals produce their own vitamin C in amounts between one gram and 20 grams (six teaspoons) each day, compared to the human body weight. These amounts of ascorbate are obviously sufficient to

Why Animals Don't Get Heart Attacks



With the rarest of exceptions, animals don't develop arteriosclerosis.

Prominent examples are bears. They have average blood cholesterol levels of about 600 mg/dl. They don't get heart attacks because they produce their own vitamin C, which stabilizes their artery walls.

optimize the stability of their vascular walls — without any necessity for statins and other cholesterol lowering drugs.

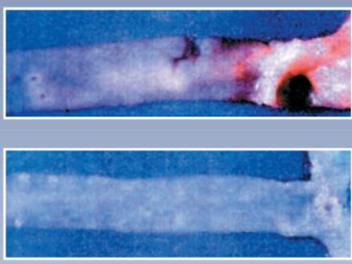
4. Why are all important risk factors for cardiovascular disease closely connected to ascorbate deficiency?

All risk factors for cardiovascular disease known today, including:

- carbohydrate metabolism — such as diabetes
- lipid metabolism — high cholesterol and other hyperlipidemias
- amino acid metabolism — such as homocysteinuria

are closely connected to deficiencies in vitamin C and other micronutrients essential for vascular cell metabolism. The common denominator of these metabolic disorders is to provide compensatory stability for the vitamin-deficient vascular wall. This is also the reason why ascorbate deficiency increases fibrinogen and thromboxane levels while decreasing endothelial-derived relaxing factors (NO) and prostacyclin.

The "Guinea Pig Proof"
Like humans, guinea pigs cannot produce their own vitamin C.



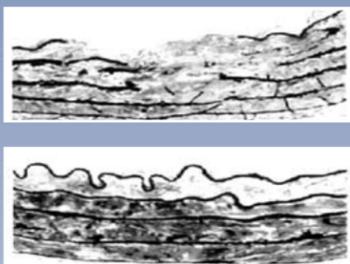
With low vitamin C in their diets, these animals develop atherosclerotic plaques structurally identical to human atherosclerosis.

When fed a daily amount of vitamin C equivalent to 5 grams, the arteries were protected and did not show any plaques.

Let's consider the key evidence for the scurvy-heart disease connection. The guinea pig, like man, cannot synthesize ascorbate endogenously. In our research published in the *Proceedings of the National Academy of Sciences*, we demonstrated that when guinea pigs were fed vitamin C only at the level of the human RDA, they developed atherosclerosis. These vascular lesions were histologically indistinguishable from human atherosclerotic plaques. In contrast, animals that received about one teaspoon of vitamin C per day had clean arteries.

These experiments were confirmed by Dr. Maeda and her colleagues in an ascorbate "knock-out" animal model. The first manifestation in these animals was the deterioration of the vascular wall, which resembled early atherosclerosis in humans.

Confirmation for Dr. Rath's Scurvy-Heart Disease Connection



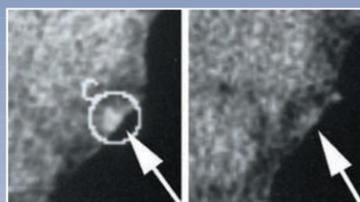
Maeda, et. al. PNAS (2000) 97: 841-846.

When vitamin C production in mice was genetically "terminated" and they did not receive vitamin C in their diets, these animals developed structural lesions in their artery walls identical to early human atherosclerosis.

Normal mice, able to produce their own vitamin C, have healthy vascular walls and cardiovascular disease does not develop.

We confirmed these results in a clinical study in patients with existing coronary artery deposits measured by Ultrafast Computed Tomography. Following a defined vitamin program, the progression of calcification significantly decreased and, in some cases, the disappearance of lesions was documented, as you can see in the X-ray CT pictures.

Clinical Proof From Coronary Heart Disease Patients



Before After

For the first time in medicine, the natural reversal of coronary heart disease was documented by X-ray pictures (Ultrafast Computed Tomography).

In this patient, the coronary artery plaques had entirely disappeared after one year of following my cellular nutrient program.

The scurvy-heart disease connection means a paradigm shift in medicine from targeting symptoms to the only relevant preventive and therapeutic target: the stability of the vascular wall. With the discovery of the scurvy-heart disease connection, the "universe of heart disease" has ceased to be a "plate" and has become a "globe."

The Scurvy-Heart Disease Connection Turns the "Universe of Heart Disease" From a Plate Into a Globe



Now that we have identified the true nature of cardiovascular disease, its eradication is only a question of time. Ten years from now, the headlines of leading newspapers may read:

NEWS HEADLINES IN A DECADE MAY READ:

- "WHO proclaims heart disease as eradicated."
- "The pharmaceutical market of statins and other symptom-oriented drugs have collapsed on Wall Street."
- "The cardiology departments at Stanford and other medical schools are closing."

On behalf of millions of patients with heart disease, I call upon Stanford University and other medical institutions to accept their responsibility and join us in the eradication of cardiovascular disease. (End of lecture)

Reactions to My Lecture

Question by John Cook, Ph.D., M.D., Professor of Cardiology and organizer of this conference at Stanford Medical School: Dr. Rath, you mentioned something that is very interesting. In fact, I think it is the \$64,000 question: Why does one develop atherosclerosis? Why is there a special heterogeneity (variation) in atherosclerosis? I think that's an important point. I feel it is because of differences in the systems, in that the veins and arteries are quite different. Certainly, they are subjected to different hemodynamic (blood flow) forces, and actually

they are derived from different tissues, the veins, capillaries and so forth, and my own feeling is that would explain the special heterogeneity, as well as the hemodynamic forces. Any comment on that?

Dr. Rath: Well, if you take a coronary bypass operation, for example, a vein is taken from the leg and that blood vessel is implanted as a coronary artery on top of the heart. From that moment on, this vein is subjected to pulsatile (pumping) blood flow. The former vein is now functioning as an artery, and it develops atherosclerotic plaques that eventually can clog this blood vessel.

Comment by another professor of cardiology: But we also have studies that show little or no effect of vitamins on cardiovascular disease.

Dr. Rath: Who is "we"? If you go to the medical libraries on the Internet, you will find over 10,000 studies documenting the health benefits of vitamins. Moreover, the greatest study ever conducted on Planet Earth has revealed that in billions of animals, cardiovascular disease is essentially unknown because they produce their own vitamin C.

The question is how long are you willing to ignore the facts and risk that millions of people will continue to die from a disease that could be long gone? So, who is "we"?

"My dear Kepler, what do you say of the leading philosophers here to whom I have offered a thousand times of my own accord to show my studies, but who, with the lazy obstinacy of a serpent who has eaten his fill, have never consented to look at the planets, or moon, or telescope? Verily, just as serpents close their eyes, so do men close their eyes to the light of truth."

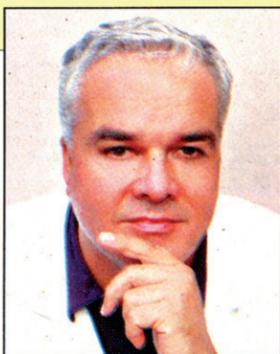
Galileo Galilei in a letter to Johannes Kepler, written in 1630

USA Today

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Breakthrough in Cancer Research

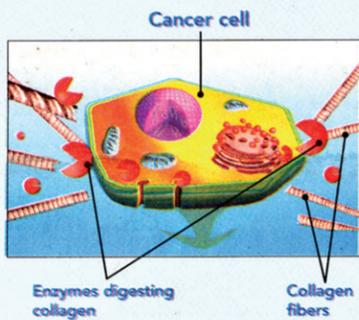
An all-natural, scientifically-proven approach to treating cancer now available



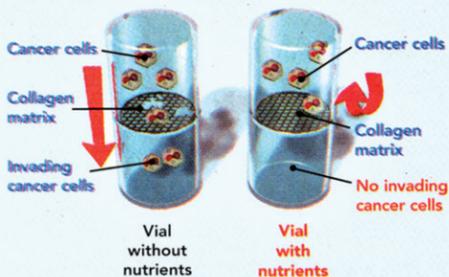
Matthias Rath, M.D.
Physician and scientist who discovered the role of nutrients in controlling the spread of cancer

Research Details

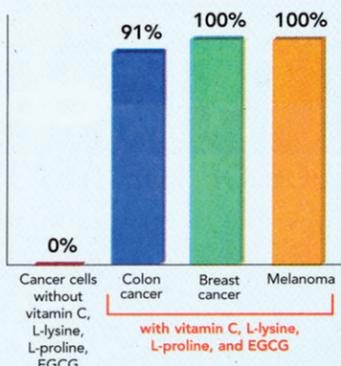
Cancer cells secrete enzymes that dissolve connective tissue, allowing their spread.



Cancer cell experiment demonstrating that nutrients can block the spread of cancer cells



Percentage of cancer cells blocked from spreading through collagen matrix



Fact 1:

Until now, there has been no effective, natural, scientifically-proven approach to preventing the spread of cancer (metastasis).

Fact 2:

Chemotherapy, radiation, and other conventional cancer therapies attack both healthy and diseased cells.

Fact 3:

No conventional treatments exist to control metastasis, the deadliest phase of cancer.

Fact 4:

Cancer cells spread by producing enzymes that dissolve connective tissue.

Fact 5:

Our research proves that vitamin C, lysine, proline, and specific extracts from green tea can inhibit the spread of cancer cells.

Fact 6:

This all-natural, scientifically-proven approach to controlling the spread of cancer is safe and effective — no side effects.

We urge doctors to contact us about conducting clinical studies in the natural treatment of cancer. If you are a cancer patient, encourage your doctor to consider conducting a clinical study with us.

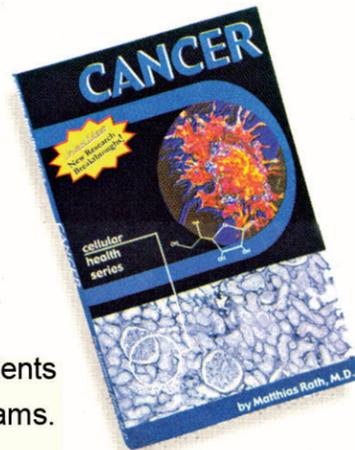
This research was funded by thousands of patients who have been helped by natural health programs.



Clockwise from front:
Aleksandra Niedzwiecki, Ph.D.,
Director of Research;
Shrirang Netke, Ph.D.; Waheed Roomi, Ph.D.;
Vadim Ivanov, M.D., Ph.D.; Svetlana Ivanova

These research findings were presented at the 19th Annual Miami Breast Cancer Conference February 27 – March 2, 2002.

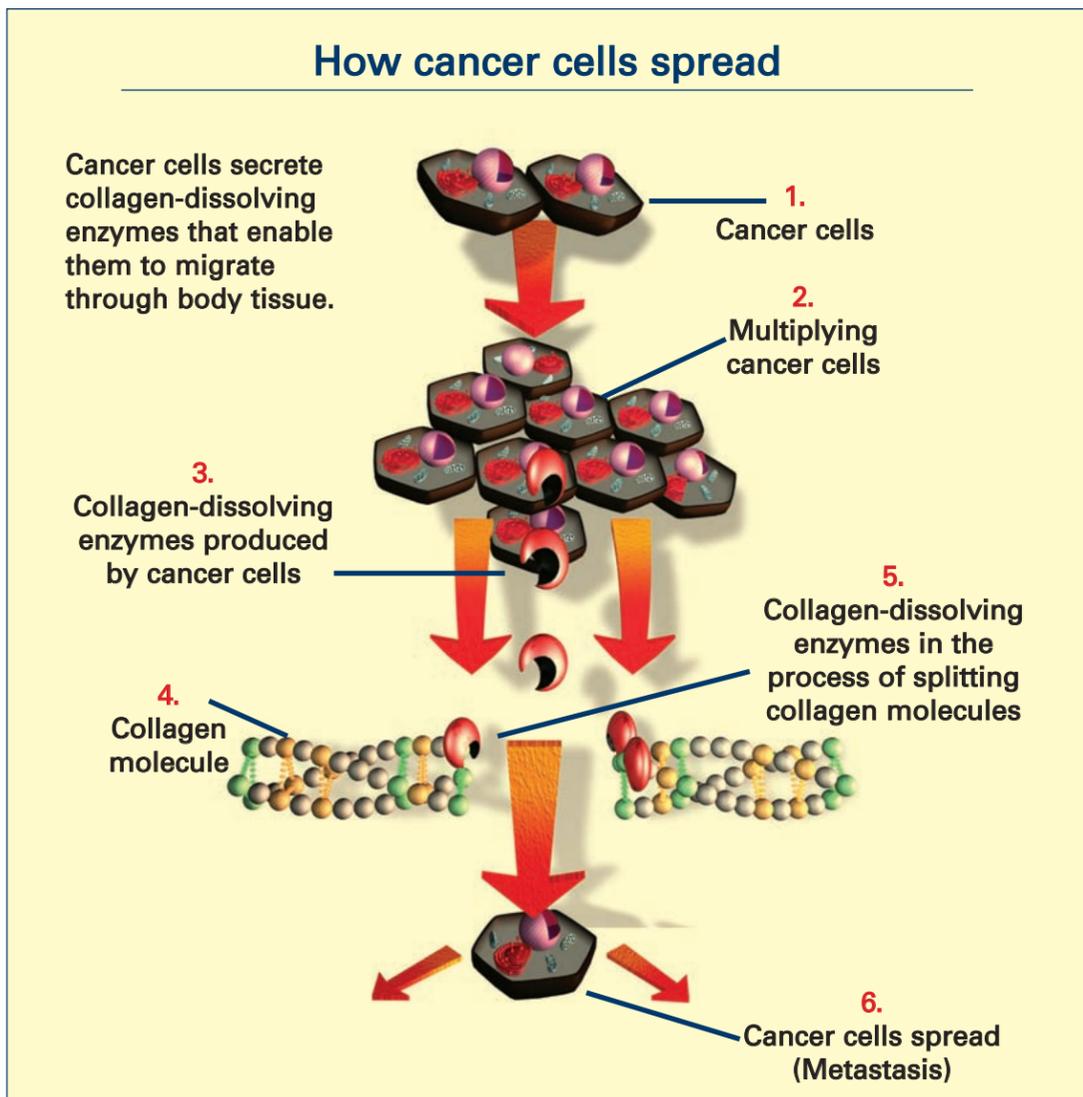
Order your copy of Dr. Rath's book **Cancer** today.



Visit www.dr-rath-research.org, the leading Web site about natural health.

Breakthrough in Cancer Research

The Dr. Rath Research Institute in California is one of the leading research institutions in the field of natural cancer control. These pages provide a mere glimpse of the available scientific evidence for the decisive role of micronutrients in the natural control of cancer. More details can be found on the website of our institute at www.dr-rath-research.org.



Cancer cells develop in the body as a result of damage to cellular DNA. Such abnormal cells are constantly created in the body during one's lifetime, but the body has various means to find and destroy these cells. Unfortunately, abnormal cells can escape destruction, multiply rapidly and grow into tumors. A tumor confined to one location in the body rarely endangers a person's life. Fact is that approximately 90% of all cancer deaths occur during the stage of metastasis when cancer cells spread and invade other organs and tissues.

To facilitate their invasion into other organs, cancer cells secrete enzymes that digest connective tissue, above all collagen molecules. The splitting of collagen and the 'digestion' of connective tissue is a precondition for the spread of cancer cells and for metastasis.

Victory Over Cancer Is in Sight

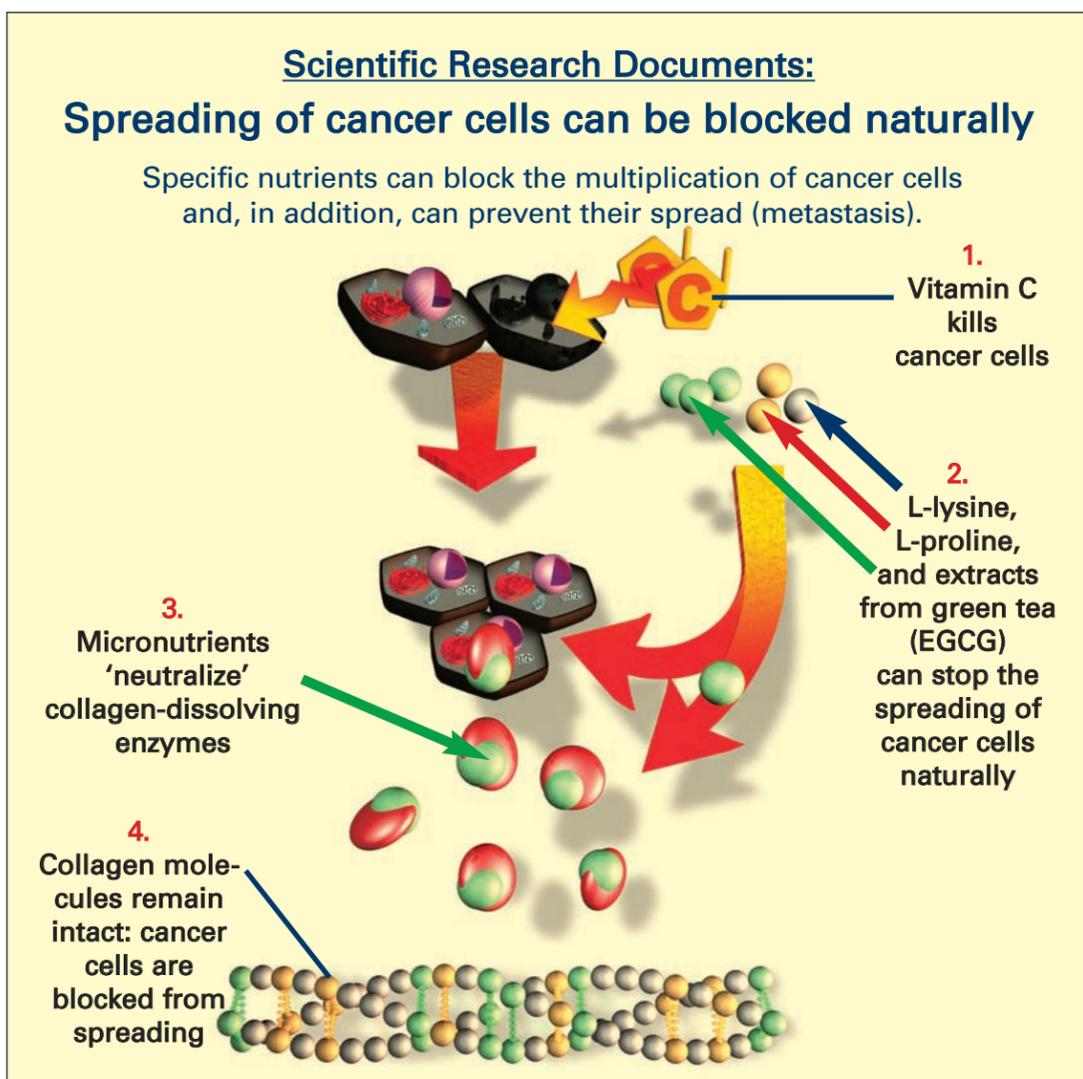
Already under healthy conditions certain cells need to 'migrate' through the body, e.g. white blood cells (leucocytes) when they leave the blood vessels to fight off an infection anywhere in the body. In the same way, cells of the reproductive organs (ovary, uterus, breast etc.) need to break down collagen in order to "remodel" an entire organ, e.g. the uterus during pregnancy and the breast during lactation.

Thus, these cells – already under normal conditions – produce and secrete enzymes that have the fascinating ability to digest collagen and other connective tissue components. It is important that these enzymes be closely regulated by sets of "biological switches" – activators and inhibitors – that closely control this mechanism and prevent any overshooting destruction of the tissue.

If this control mechanism fails, these enzymes are produced continuously, leading to an uncontrolled break down of connective tissue in the body. Precisely that happens in cancer: the uncontrolled production of collagen splitting enzymes is a hallmark of the cancer disease and a precondition for metastasis.

The scientific discovery that certain nutrients, including the natural amino acids L-lysine, L-proline as well as extracts from green tea can effectively block these collagen-digesting enzymes allows, for the first time, a science-based approach for the natural control of cancer. The abundant evidence – including the reversal of tumors – is documented on the website of our research institute.

Our research team has documented the mechanism for the natural control of cancer described below for more than 30 types of human cancer cells:



Breakthrough in the Fight Against AIDS

Micronutrients Help Control AIDS

Micronutrients as an Effective, Safe and Affordable Approach to Help Control AIDS

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SUMMARY

OBJECTIVES:

Malnutrition – in particular micronutrient deficiencies – are a major contributing factor to the continued spread of the Acquired Immunodeficiency Syndrome (AIDS) in the developing world. Moreover, micronutrient deficiencies are aggravated by AIDS-related symptoms including chronic diarrhoea, weight loss, fever and opportunistic infections. The community health education programme conducted by the South African National Civic Organization (SANCO) in Khayelitsha, Cape Town, created an opportunity to evaluate the effect of a defined micronutrient programme on the course of AIDS related symptoms in HIV positive patients.

NATURAL HEALTH PROGRAMME:

One hundred community members with AIDS were selected by community health professionals in this natural health programme. The participants included adult HIV positive men and non-pregnant women with advanced AIDS symptoms (stage 2 and 3 of the 4-stage grading according to the Center for Disease Control, CDC). None of the participants was or had been taking antiretroviral drugs (ARVs). The micronutrient programme consisted of a combination of vitamins, minerals, trace elements, amino acids and polyphenols from green tea, supplied in the form of tablets. At the beginning of this natural health programme and after 4 and 8 weeks of taking the nutritional supplement, a physician examined the patients. In addition, their health status was assessed with the aid of a graded questionnaire for AIDS-defining symptoms and general health.

RESULTS:

In those participants who completed the entire 8 week micronutrient programme a substantial reduction of the AIDS-defining symptoms was

observed. Specifically, micronutrient supplementation was associated with a statistically significant decrease of fever episodes, weight loss, diarrhoea, severity of tuberculosis related symptoms in those patients infected with TB as well as the occurrence of fungal and other opportunistic infections. Daily micronutrient supplementation also significantly reduced other symptoms associated with AIDS including sores, colds, nausea, fatigue, depression, headache, skin rashes, swollen glands, joint pain and numbness in the extremities (hands or feet). There were no adverse side effects related to the intake of nutritional supplements.

CONCLUSION:

The micronutrients evaluated in this pilot community health programme offer an effective, safe, affordable natural health approach to halt the progression of AIDS-defining symptoms. Moreover, unlike any other health approach currently used, micronutrients offer the opportunity to reverse

INTRODUCTION

Vitamins and other micronutrients are essential for the adequate production and optimum function of white blood cells, hormones and other factors essential in determining optimum immune response. In particular the critical role of vitamin C, vitamin A, vitamins B-5, B-6, B-12, folic acid as well as certain trace elements such as iron, zinc, selenium, copper and others have been an integral part of textbook knowledge in all fields of biology^{1, 2, 3, 4} for decades.

Amazingly, this basic scientific knowledge has not been promoted by health policy makers to fight immune deficiencies, including the AIDS epidemic. Thus far, only a limited number of clinical studies have been conducted to test the health benefits of micronutrients in AIDS patients⁵⁻⁸. Despite the fact that several of these micronutrient studies showed encouraging health benefits, none of them has been trans-



In Khayelitsha, the biggest shanty town just outside Cape Town, around 2 million people live in the most impoverished conditions. Many of them are AIDS-positive. It is here that the micronutrient programme was implemented.

AIDS-related symptoms and significantly improve the health of AIDS patients. Thus, micronutrient supplementation should become the basis of public health strategies in the global fight against AIDS. The immediate implementation of these findings by national governments as well as the World Health Organization (WHO) would save millions of lives it would provide valuable time for the international research community to find lasting solution to end AIDS.

lated into public health policies to fight the AIDS epidemic.

The neglect of micronutrient research in relation to developing global strategies to control AIDS is even more remarkable, since from the beginning of the AIDS epidemic, researchers noticed micronutrient abnormalities in AIDS patients. This was not surprising since chronic diarrhoea, anorexia, malabsorption, impaired nutrient storage, increased energy demands – all of which are symptoms occurring in AIDS

The community health programme conducted by SANCO Khayelitsha is based on a broad educational approach about the role of nutrition and micronutrients in helping to improve health in general and immune function in particular. Those members of the community affected by AIDS were offered a micronutrient programme that had been donated to SANCO Khayelitsha by the Dr. Rath Health Foundation. In addition to the general educational material the participants received an information sheet detailing the role of micronutrients in the body.

HEALTH AND NUTRITIONAL ASSESSMENT

Upon entry into the nutritional programme, the participants were examined by a physician. In addition, their health status was further assessed with the aid of a bilingual questionnaire grading their symptoms on a scale of 0 to 4 (0 = no symptoms, 1 = mild, 2 = medium, 3 = advanced, 4 = severe). The symptoms included fever, diarrhoea, cough, weight-loss, TB, and opportunistic infections associated with AIDS-defining diseases for Africa^{20,21,22}. Among other physical symptoms assessed were: swollen glands, joint pain, numbness in the hands or feet, nausea or vomiting, headache, bloating, irregular heart beat, oral sores and discomfort, gum bleeding, loose teeth, eyes burning or itching, eyes sensitive to light, blurred vision, wounds that would not heal, dry or itchy skin, skin bruises, muscle cramps, cold hands or feet, sweating without work or exertion, unusual thirst, and colds. Indicators of general well-being recorder were: nervousness, irritation, anxiety, depression, insomnia, loss of appetite, fatigue, dizziness, memory loss.

At 4 and 8 weeks participants were re-examined by a physician. Their current health status was reassessed on the graded questionnaire described above. The participants were also questioned about the composition and frequency of their daily meals. These included among others corn, white bread, brown bread, rice, noodles, milk, fish, chicken, red meat, cereals, hot chips, sweets, sweet potatoes, green peppers, salads, lemons, oranges, tomatoes, bananas, apples, grapes, and nuts.

The daily micronutrient supplementation was associated with a statistically significant decrease of fever, diarrhoea, persistent cough, weight loss and TB symptoms. This is a highly significant fact since these five symptoms were defined by the 1985 WHO reference conference in Bangui, Central Africa, as "AIDS-defining".

The specific results for each of these symptoms were as follows: Micro-nutrient supplementation was associated with a rapid and statistically signifi-

cant reduction (p=0.0001) in the severity of fever, chills and excessive sweating which decreased by 52% after 4 weeks and continued throughout the 8 week period. These findings are summarized in Figure 1.

Daily intake of micronutrient supplements decreased diarrhoea by 50% after 4 weeks and 51% after 8 weeks, which was also statistically significant (p=0.003). These results are documented in Figure 2 .

As shown in Figure 3, weight-loss in people with AIDS who supplemented their daily diet with micronutrients was significantly reduced by up to 70% after 8 weeks of intake (p= 0.0001).

Micronutrient supplementation was associated with a significant decrease in the severity of coughs by 33% after 4 weeks and by 39% after 8 weeks (p= 0.007) as presented in Figure 4.

In those participants who were also infected with TB (18 patients), the daily intake of micronutrients decreased the severity of TB-related symptoms by 40 % after 4 weeks and 61% after 8 weeks (Figure 5), which was also a statistically significant result (p=0.02).

In addition, fungal and other opportunistic infections frequently accompanying AIDS were present in 9 participants of the micronutrient programme. Severity of these opportunistic infections was 76% lower after 4 weeks and 89% lower after 8 weeks of micronutrient intake. This result too was statistically significant (p= 0.009), as represented in Figure 6 .

Other AIDS related symptoms – outside those of the Bangui definition – also significantly improved under the micronutrient programme. These results are summarized in Table 1. The severity of colds decreased by 45% after 4 weeks and 35% after 8 weeks of vitamin intake

(p=0.001). Lymphadenopathy (swelling of lymph nodes) decreased by 57% after 4 weeks and by 67% at the end of 8 weeks of nutritional supplementation. This change was statistically significant (p= 0.006).

AIDS is also accompanied by mental health problems, especially depression, fatigue as well as frequent headaches. The results presented in Table 1 indicate that all these symptoms improved after 4 and 8 weeks on the vitamin programme. After 4 and 8 weeks of micronutrient supplementation the severity of depression decreased by 48% and 47% respectively (p< 0.0001). Occurrence of fatigue decreased by 60% after 4 weeks and 68% after 8 weeks on the micronutrient programme. These results were statistically significant as well (p<0.0001). Headaches decreased by 38% after 4 weeks and 35% after 8 weeks on the micronutrient programme.

Signs of neuropathy, such as pain and numbness in the fingers and feet was scored lower after 4 and 8 weeks on the micronutrient programme (54% and 56% respectively) compared to the programme entry (p<0.0001). Also joint pain score was lower by 49% and 54%, respectively after 4 and 8 weeks of vitamin supplementation and these changes too were statistically significant (p<0.0001).

During micronutrient supplementation there was a notable effect on the healing of wounds and sores that had persisted for months prior to entering the vitamin programme. The severity of these lesions decreased after 4 weeks of taking micronutrients by 59% and after 8 weeks by 84%, which was a statistically significant difference (p=0.004). In addition, the severity and appearance of skin rashes decreased by 37% already after 4 weeks and by 64% after 8 weeks on the programme, which also reached statistical significance (p=0.04).

Table1. Changes in severity of Other AIDS-Related Symptoms Before (0 Weeks), After 4 Weeks and 8 Weeks of Taking Nutritional Supplements

Symptom	Number of Participants Affected	Symptom Severity Before Taking Nutritional Supplements		Symptom Severity After Taking Nutritional Supplementation of				p value
		Score	%	4 weeks		8 weeks		
Colds and Flu	39	2,25	100	1,25	45	1,50	35	0,001
Swollen Glands	13	2,24	100	1,50	57	1,43	67	0,006
Skin Sores	6	3,00	100	1,75	59	1,42	84	0,004
Skin Rashes	13	1,92	100	1,51	37	1,25	64	0,04
Depression	47	2,65	100	1,30	48	1,41	47	< 0,001
Fatigue	45	2,75	100	1,18	60	0,90	68	< 0,001
Headache	44	2,45	100	1,55	38	1,62	35	0,06
Numbness in extremities	43	2,70	100	1,23	54	1,20	56	< 0,001
Joint Pain	37	2,80	100	1,40	49	1,31	54	< 0,001

Column one documents the number of participants associated with each symptom. Column two reflects the average severity of these AIDS related symptoms expressed as the average values of the symptom scores as assessed in the questionnaire and described in the section Materials and Methods. Column three shows the percentage decrease in severity of AIDS-related symptoms after 4 weeks and 8 weeks of taking nutritional supplements. The last column shows the statistical analysis from the evaluation of the improvements of symptoms from the beginning of the programme to week 8. Values with p<0.05 were considered statistically significant.

All five key symptoms of AIDS markedly diminished in the course of several weeks' micronutrient programme:

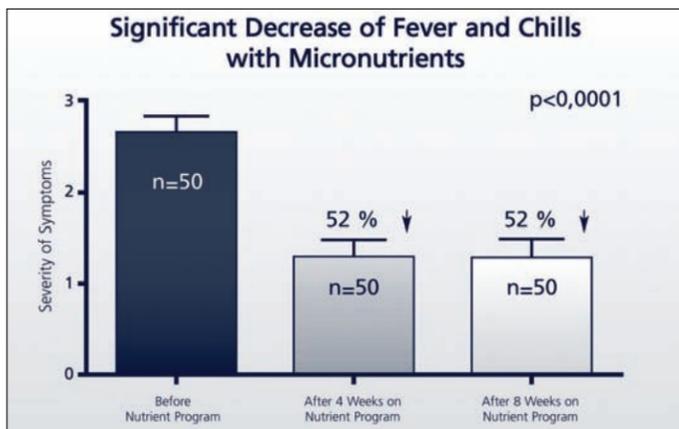


Figure 1: Changes in severity of fever, chills, and excessive sweating in people with AIDS before, after 4 and 8 weeks of micronutrient supplementation (n = number of participants experiencing these symptoms before and during the programme). p = statistical significance*

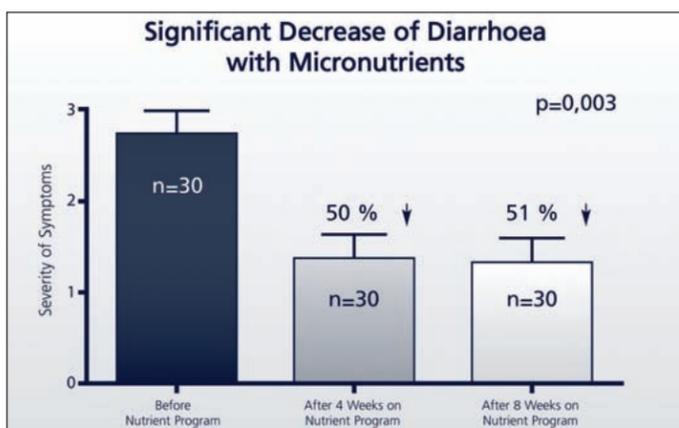


Figure 2: Changes in severity of diarrhea in people with AIDS before and after 4 and 8 weeks of micronutrient supplementation.

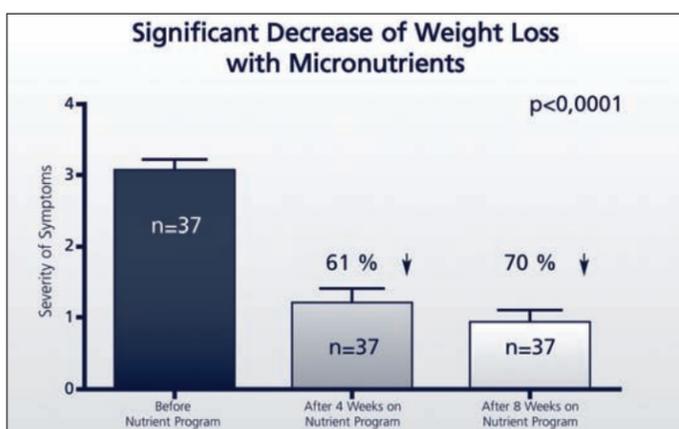


Figure 3: Changes in severity of weight loss in people with AIDS before and after 4 and 8 weeks of micronutrient supplementation.

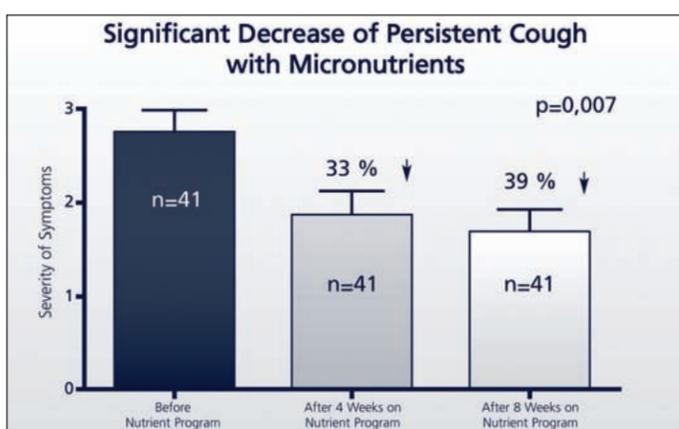


Figure 4: Changes in severity of persistent cough in people with AIDS before and after 4 and 8 weeks of micronutrient supplementation.

The healing of AIDS related wounds during the micronutrient programme was a particularly obvious and objective observation. Figure 7 documents the changes of such an AIDS-related wound – an infected ulcer on the neck of a woman living with AIDS – before and after 4 weeks of vitamin supplementation.

DISCUSSION

The results of the community nutrition programme presented in this report show that a daily supplementation of vitamins, minerals and other essential nutrients significantly reversed all the symptoms that define AIDS, namely fever, weight loss, diarrhoea, and persistent coughs, and it decreased the severity of tuberculosis.

This nutritional health programme also helped to improve other AIDS related symptoms including fungal and other opportunistic infections, sores, colds, nausea, fatigue, depression, headache, skin rashes, swollen glands, joint pain and numbness in hands or feet.

Previous intervention studies with vitamins and other micronutrients in AIDS patients have used single vitamins or a combination of a few micronutrients⁹. Notably, in certain studies a combination of vitamins C and E was shown to reverse the damaging effects of ARVs in HIV infected adults²⁰. The same combination of vitamins was shown to reduce viral load and the damage from oxidative stress in AIDS patients²¹.

In another nutritional study, vitamin C in combination with N-acetyl cysteine – a bio-available form of the amino acid



Figure 7: Micronutrient supplementation and wound healing: These pictures document the neck ulcer of a young woman living with AIDS before (top) and after 4 weeks (above) on the micronutrient programme. The wound infection (white area in the top picture) had completely disappeared after 4 weeks of vitamin intake. The wound itself, visible as a deep hole (top) had almost been completely closed (above). No such effect has been documented with antiretroviral drugs (ARVs).

cysteine – was reported to improve the immune response and lower the viral load in patients with advanced AIDS²². Other studies conducted in Durban, South Africa examined the effects of vitamin A supplementation on the morbidity and mortality of HIV infected mothers with AIDS and their children. Among all children, those receiving vitamin supplements had a 30% lower overall morbidity – i.e. a 30% lower risk to develop diarrhoea, lower and upper respiratory tract infections and rashes – compared to the control group⁵.

The health programme documented here differs from the above studies in the use of a defined combination of micronutrients targeting AIDS-defining symptoms. Since these symptoms determine the quality of life of people living with AIDS as well as their life expectancy, the findings reported here have a potential to halt the otherwise deadly course of this disease.

The findings of this community health programme are even more important, since no study with ARVs or any other pharmaceutical drug has ever shown the reversal of AIDS-defining symptoms. Thus, in the absence of pharmaceutical drugs that can cure AIDS, the encouraging health benefits of this pilot nutrient programme have important implications for the control of AIDS.

CONCLUSIONS

Micronutrient supplementation offers an effective, safe and affordable approach towards the global control of AIDS. In developing countries micronutrients combined with general food programmes should form an essential part of public health strategies to successfully fight immune deficiencies, including AIDS. The immediate implementation of these findings by national governments as well as the WHO and other international organizations will save millions of lives – and it provides valuable time for the international research community to find a lasting solution to end AIDS.

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Figure 5: Changes in severity of TB symptoms before and after 4 and 8 weeks of micronutrient supplementation in people with AIDS who had also been diagnosed with TB.

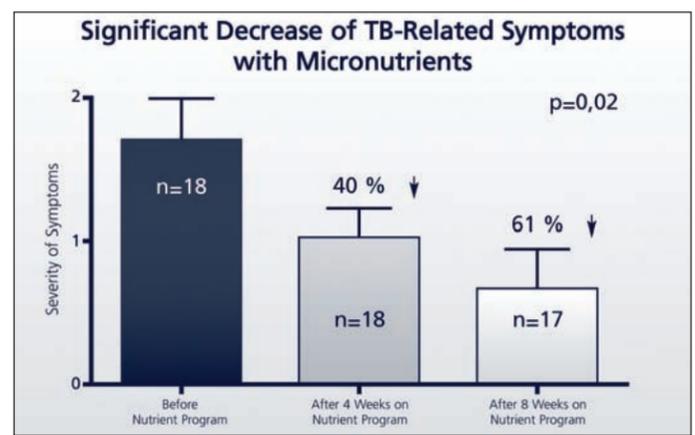
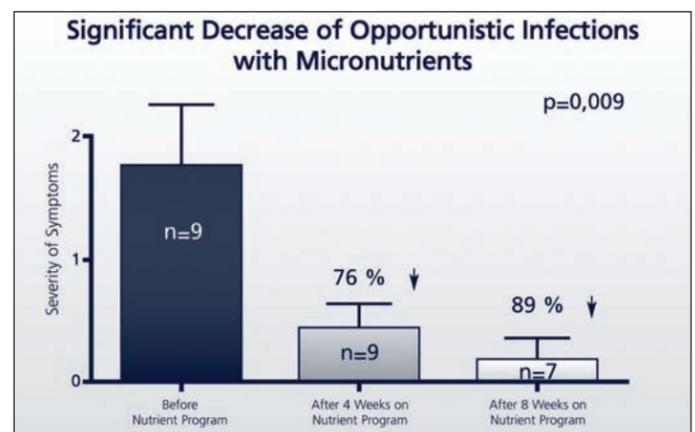


Figure 6: Changes in severity of fungal and opportunistic infections in people with AIDS before and after 4 and 8 weeks of micronutrient supplementation.



* The p-value (significance) is a statistical value. It expresses whether a result is accidental or not. The smaller the p-value, the more certain it is that the measured findings are not due to chance occurrences, but can be regarded as scientifically proven. p-values smaller than 0.05 are highly significant, that is, unequivocal. p-values lower than 0.001 are statistically significant and are regarded as certain.

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