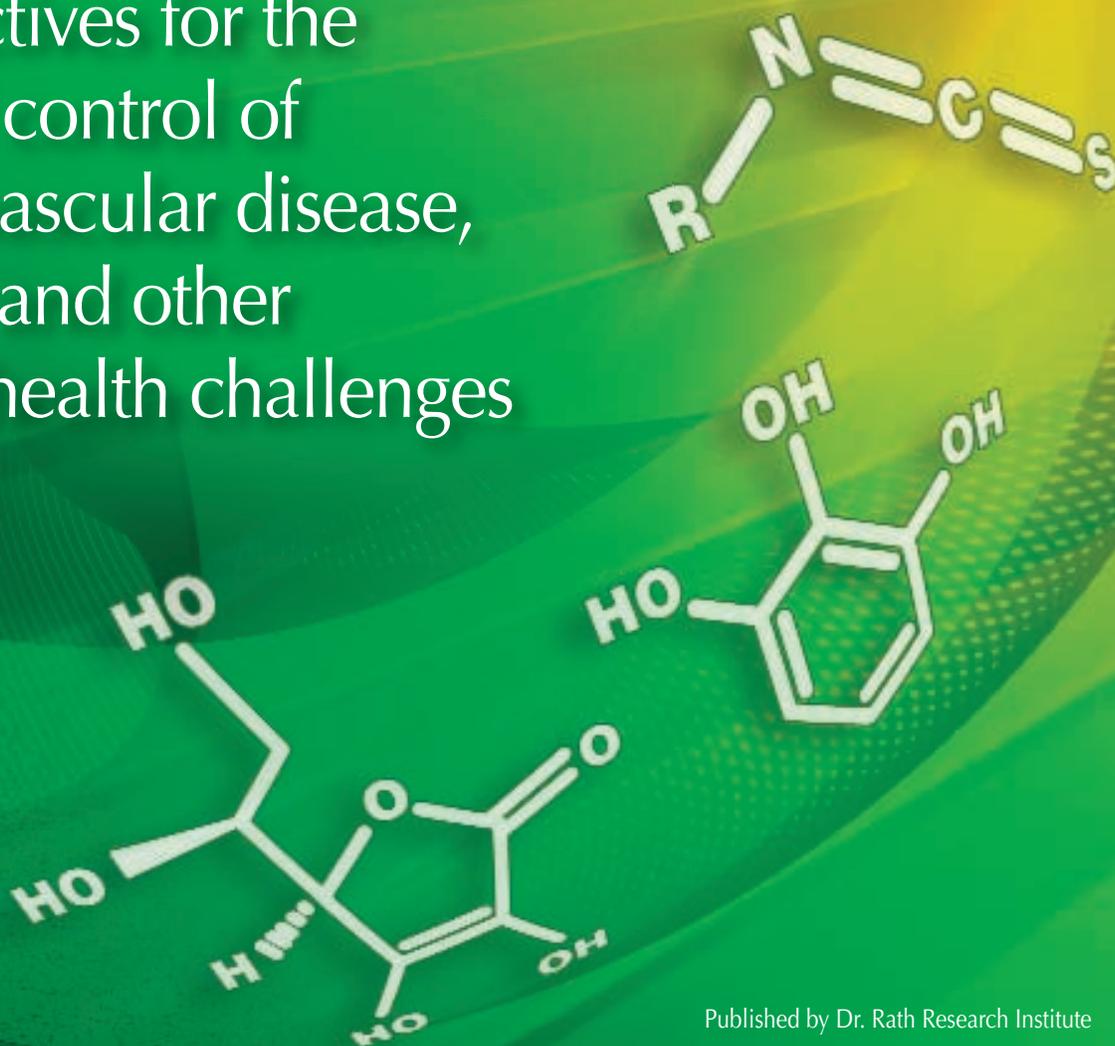


JOURNAL OF
**PHYTOBIOLOGY AND
CELLULAR MEDICINE™**

A New Age of Health

Perspectives for the
natural control of
cardiovascular disease,
cancer and other
global health challenges



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Imprint

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Dear Readers

This is the first issue of the 'Journal of Phytobiology and Cellular Medicine'.

The 'Journal of Phytobiology and Cellular Medicine' is an international publication dedicated to providing innovative scientific information from all areas of natural health science. It focuses in particular on scientific and clinical advances documenting the health benefits of micronutrients and biologically active plant-derived molecules in general.

We introduced the term 'Phytobiology' for this new field of medicine which will revolutionize health care like few other scientific advances before. As opposed to 'Phytochemistry' that focusses on the isolation and characterization of individual plant-derived molecules, 'Phytobiology' comprises the vastly expanding scientific field on understanding the biological synergies in the metabolism of plant cells and the application of this knowledge to advance human health. Phytobiology is an expansion of the field of Cellular Medicine, the study of micronutrient synergies at the cellular level.

The Journal of 'Phytobiology and Cellular Medicine' also addresses topics of health policies in relation to implementing this scientific knowledge into mainstream medicine.

We are convinced that this journal will promote human health by presenting scientific advances in this new field of medicine not only to the scientific and medical community but also to the growing number of patients and people interested in effective, safe and affordable approaches to health.

The Editorial Board

A New Age of Medicine Begins

The 21st Century will be recognized as the beginning of a new Age of Medicine that combines a new understanding of the cellular causes of diseases with an overall acceptance of health benefits of micronutrients and phytobiologicals in general.

This era will be marked by an expansion of public education in natural health, and by using therapies that are compatible with the biological processes in our body. These natural therapeutic approaches enhance our body's natural healing potential rather than disrupting it by interventions with toxic drugs.

The following article summarizes the key achievements of Cellular Medicine research over the past two decades and shows the breathtaking perspectives of 'Phytobiology' in general.

The fact that many chronic diseases develop as a consequence of long-term deficiencies of micronutrients is gaining increasing acceptance.

Our work has been at the roots of perception change

**Growing acceptance
that chronic diseases
are caused by
a long term
vitamin deficiency**

We have introduced a new approach to human health which we call “nutrient synergy.” Today we see how this innovative approach is being increasingly adapted by others and in a form of various compositions of micronutrients, often described as “vitamin cocktails

Many independent clinical trials, such as those in heart failure and more recently in cancer, have con-

firmed the superiority of nutrient synergy over single nutrients in fighting various health problems. We developed this concept and scientifically documented it a long time ago. Have you noticed that today various nutritional supplements are marketed as “working synergistically in our body cells?” Whose idea was that?

Our work has been at the roots of perception change

- More research and increased health application of vitamin “cocktails”, not only single nutrients.
- Growing interests in studying nutrient synergy effects (ie. heart failure, cancer, etc)



Fig 5

Another important sign of change has been seen in the field of AIDS. I recommend your watching the interview with Dr. Luc Montagnier available on YouTube.

Dr. Montagnier is a co-discoverer of the human immunodeficiency virus (HIV) associated with AIDS. In

this interview he said that the solution to AIDS will not come from the anti-viral drugs. It will come naturally from enhancing the function of the body's immune system with proper nutrition.

Our work has been at the roots of perception change

**AIDS can not be controlled by ARV drugs,
but by the immune system enhancing nutrients...**

**(Dr. Luc Montagnier –
the discoverer of HIV)**

Our remarkable findings in cancer have inspired scientific interests in natural health while exposing the failure of the pharmaceutical cancer industry. Last year, one of the leading medical journals, the “Journal of Clinical Oncology,” published that there are 100 clinical trials investigating the effectiveness of natural

substances in prevention and therapy of cancer. This is a giant accomplishment that would have not been possible without our research progress.

Such remarkable impact of our work on shaping the medicine of the future is a team effort.

Our work has been at the roots of perception change

Progress in natural approach to cancer:

Currently, over 100 clinical studies are investigating the effectiveness of various natural components in prevention and therapy of cancer

Journal of Clinical Oncology, 2009

The following pictures show our Institute in California and our research team.

Shaping up the medicine of the future



**Dr. Rath Research Institute
California, USA**

- Breakthrough discoveries
- Scientific research
- Health education



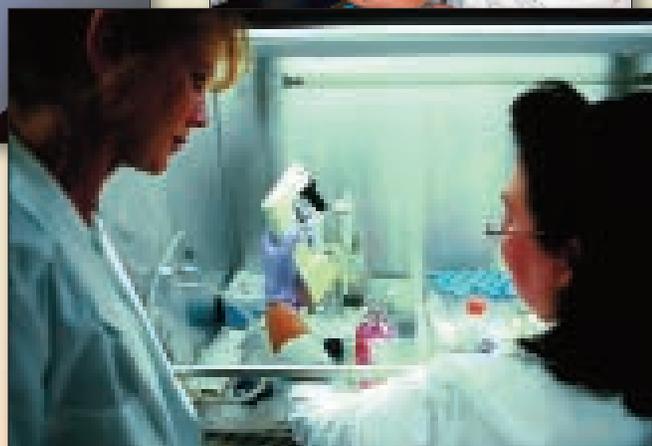
These are our laboratories where we test all scientific ideas. As you can see they do not differ from any university or pharmaceutical company labs.

This is where we test various ideas



This is how we test and study the micronutrients. We use the same technology, equipment and methods that are applied by any pharmaceutical industry and university researchers.

This is how we perform these tests



The other members of this team are all of YOU. This is you, your families and friends together with people in many countries of the world who can benefit from the accomplishments of our research. At the same time, because of your efforts we can continue this work towards improving the health and lives of everyone on this planet. Thank you for being such an important part of our team.

The following pages summarize some of the most important results of our scientific research.

Here only a few selected research areas can be presented. The first area will be cardiovascular disease - the number one health problem in the industrialized world.

Those who benefit from this research and help spreading our health message



The discovery of the scurvy-heart disease connection has been the main challenge to the pharmaceutical business with heart disease. This business has been built on an old concept that cholesterol is the main

cause of heart disease. This false concept is being used for marketing cholesterol-lowering drugs, in particular statins, to millions of people without any proof that these medications prolong life.

Progress in Heart Disease

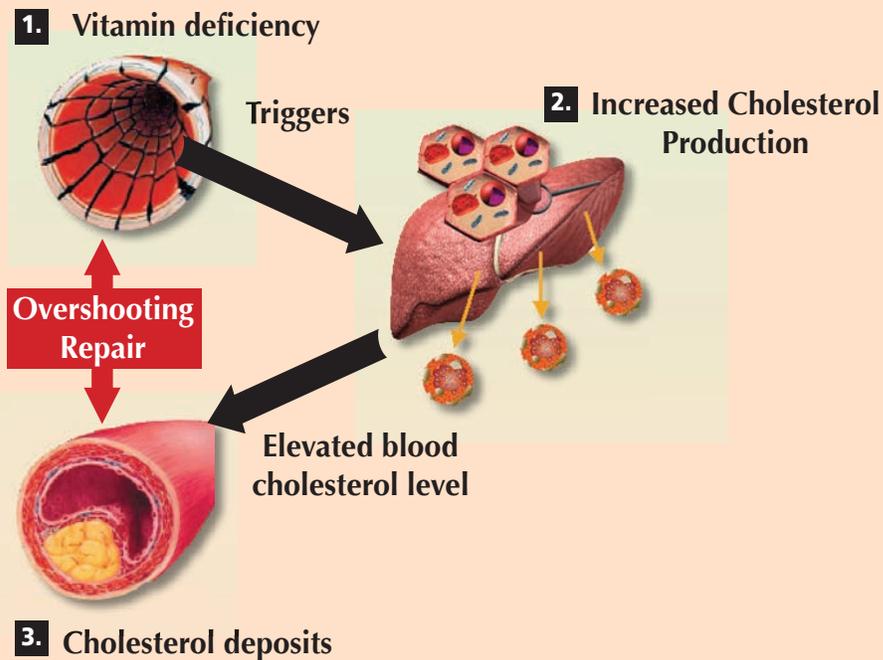
**Challenging the old fortress of
cardiology: cholesterol is not the
main cause of heart disease**

Elevated cholesterol levels in the blood can not be the primary cause of cardiovascular disease.

The facts are: As a result of a long term insufficient intake of vitamins, the blood vessel walls weaken and develop crevices and cracks that need repair. Consequently, the liver increases the production of cholesterol molecules, which are carried in the blood stream

in a form of lipoproteins. These cholesterol-rich molecules deposit in the weakened vascular wall areas, similarly to mortar which is used to repair holes and cracks in a brick wall. If this process continues for years and decades it causes the build up of atherosclerotic deposits and narrowing the blood flow passages, which can consequently lead to a heart attack or a stroke.

The biological link between cholesterol blood levels and the vascular wall



Therefore, decreasing cholesterol levels in the blood by artificially shutting down its production in the liver does not eliminate a real cause of heart disease. Without optimizing the vascular wall structure, the need for repair and therefore, for more cholesterol continues. The solution to it is easy: Both the health of the blood vessel walls and optimum cholesterol production in the liver can be assured by a sufficient supply

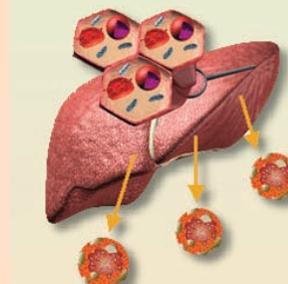
of vitamin C, the amino acids Lysine and proline, B-vitamins and other natural compounds. Many studies have been published documenting that lowering blood cholesterol levels with drugs and without restoring optimum function of the vascular walls is not effective in stopping heart disease. These findings have been either ignored or criticized by the special interests connected to the cholesterol drug business.

Consequences of this new understanding:

Effective approaches to cardiovascular disease have to include natural measures to support healthy vascular wall and cholesterol metabolisms



1. Stabilizes the impaired vascular wall



2. Controls cholesterol synthesis

Vitamin C + other micronutrients

However, despite millions of dollars being pumped into maintaining and promoting the “cholesterol” fallacy and aggressive marketing of cholesterol-lowering drugs, there are signs of change. We can see that critical voices disputing the wide spread use of statins are increasingly reaching the media and mainstream medicine.

One of the examples that triggered such a criticism was a clinical study with a cholesterol-lowering drug, Vytorin. Vytorin is a combination of a statin which inhibits cholesterol synthesis in the liver with another drug that impairs absorption of fat in the intestine. In 2008, only after the request from the US Congress, Merck, the manufacturer of this drug, finally revealed the results of the study. It then became obvious why these clinical results were kept hidden for almost two

years. This was not because of a failure of this drug to lower cholesterol. Patients taking Vytorin had lower cholesterol levels, but they also had more heart attacks. In addition, patients who took the drug experienced the growth of coronary plaques at almost twice the rate than a control group.

These findings triggered many critical articles in The New York Times, Business Week and other journals, with some even questioning the cholesterol dogma. It is obvious that although fully aware of health risks to the patients, Merck had continued aggressive promotion and sales of the drug while hiding the study data for two years. Eventually, under public pressure the drug was withdrawn from the market. What do you think? For how long?

The view that cholesterol-lowering drugs prevent heart attacks gradually collapses

On January 15, 2008, the ‘New York Times’ and other international newspapers reported of a clinical study with a combination of two cholesterol lowering drugs (Vytorin) with the following results:



- Patients receiving these drugs developed coronary artery plaques – the cause of heart attacks – twice as fast as the control group.
- The drug makers deliberately endangered the lives of 5 million people currently taking statins by withholding this crucial information for almost 2 years.

Statin sales generate about \$30 billion/year.

Not for too long. Here you see the ad for the very drug, Vytorin, which I saw in the magazine last year in August. It is still being prescribed to patients, many of whom are unaware of its health risks.

Was Vytorin removed from the market?

Of course not.

Again, business interests have taken a priority over our health

(Now Vytorin is also available in the EU)

There are 2 sources of cholesterol.
Food & Family.

Only VYTORIN treats both.

Business Week
August 17, 2009

VYTORIN
Treat the 2 sources of cholesterol.

Statins are the most popular cholesterol-lowering drugs prescribed to people of all ages, including very young children. However, there are serious concerns about side effects of these drugs.

In March, 2010 the US FDA issued a warning about an increased risk of muscle damage caused by another popular statin drug – Zocor. Zocor and all other statin drugs inhibit not only the production of cholesterol, but also the synthesis of an essential bio-energy molecule - Coenzyme Q10. This increases a risk of cell damage, especially in the liver and muscle cells

which often manifest as a muscle pain. In more severe cases a person can die from rhabdomyolysis.

A few years ago, a statin drug called Lipobay or Baycol was taken off the market because it caused death from rhabdomyolysis in a significant number of patients.

How many more people have to die or get hurt in order to maintain the enormous profits of the pharmaceutical drug business?

Lipobay was not an exception! New warning about statins

2003

- **On March 19, 2010 the FDA warned patients and doctors about increased risk of muscle injury from another cholesterol-lowering drug, Zocor.**

2010

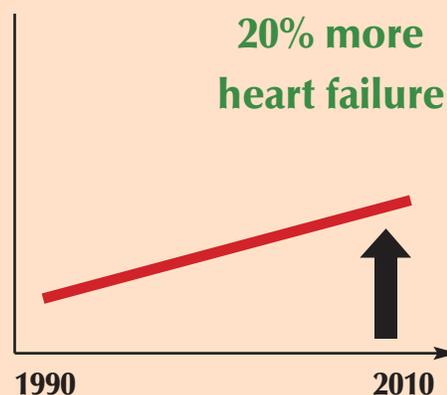
- **In 2003, a similar statin drug, Lipobay (Baycol) was taken off the market after it caused 30,000 deaths from a drug-related muscle injury**

EVERY statin drug increases your risk of a similar deadly side effects!

Statins can cause damage not only to the leg and arm muscles. Our heart is a muscle too. It is interesting that since the introduction of statins in the 1990s there has been more than a 20% increase in the number of heart failure cases. This connection is still being ig-

nored and the statin drug market which generates about 30 billion dollars annually continues. Even more, it created another source of revenue from the sales of drugs for heart failure. "Business with disease" - as usual.

Since the introduction of statins there was a dramatic increase in heart failure hospitalization



Heart is the muscle too...

However, we have powerful tools in our hands to protect our health.

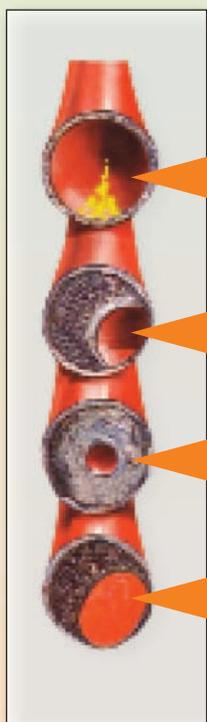
Our studies thoroughly document that every stage in the development of heart disease can be effectively controlled by micronutrients.

This includes early stages in which micronutrients can strengthen the vascular wall structure and prevent ox-

idation and deposition of lipids in the blood vessel wall. They are effective in preventing multiplication of vascular cells and as such, can curtail expansion of a plaque size. Micronutrients can also halt the calcification process of cardiovascular deposits and in some cases even reverse them. They can positively affect blood clotting properties important in preventing plaque ruptures and formation of blood clots, thereby reducing the risk of heart attacks or strokes.

Micronutrients are effective in controlling every stage of atherosclerosis

Prevention and reduction of:



1. Cholesterol deposits and oxidation (early lesions)

2. Buildup of fibrous cap and vascular cells proliferation

3. Calcification of vascular plaques

4. Plaque rupture/heart attack

www.drrathresearch.org

Recently our cardiovascular research expanded to include a study on the genetic predisposition to heart disease. We tested whether in such cases a dietary micronutrient supplementation provides any health benefit.

In our study we used mice that were deficient in a gene called ApoE. Contrary to normal mice, these animals have a predisposition to developing high cholesterol levels and heart disease. In our studies we even doubled their risk for heart disease by increasing

the blood levels of angiotensin – an enzyme that promotes constriction of blood vessels and thereby increases blood pressure.

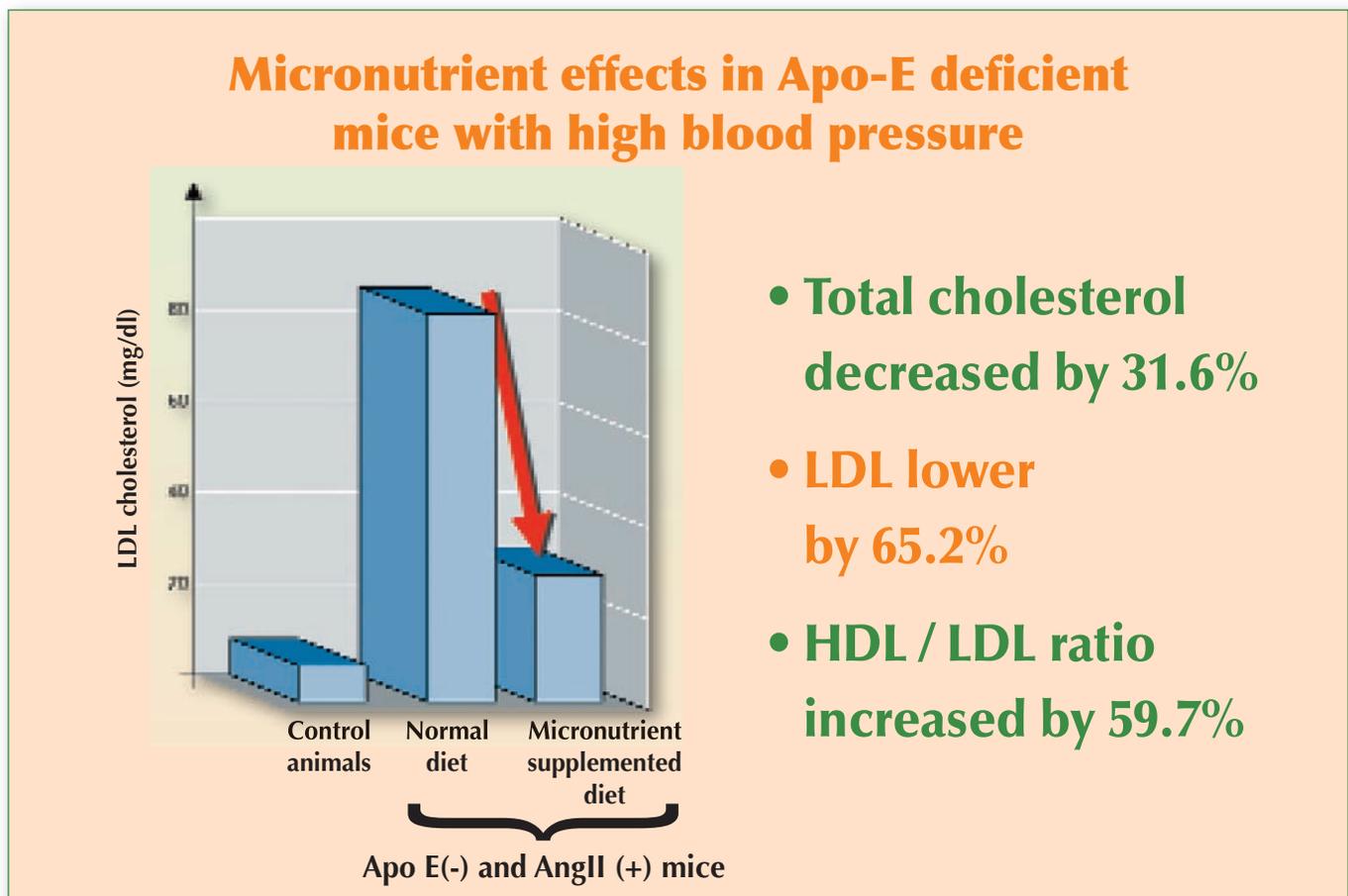
Therefore these mice had a very high heart disease risk; for one, because of their genetics and also because of a high blood pressure. We fed one group of these mice a conventional diet and the other group received the same diet but enriched with a specific composition of micronutrients. At the end of the study we tested blood cholesterol levels and evaluated histological changes in the arteries of these animals.

Our new research: Micronutrients in genetic predisposition to heart disease

- **Deficiency of the gene for Apo E increases risk of heart disease and promotes high cholesterol blood levels**
- **We studied the combined effects of this genetic problem and high blood pressure on the development of heart disease**
- **In particular, how micronutrient supplementation affects deposition of cholesterol in the arteries, blood cholesterol levels, aneurysm and other manifestations of cardiovascular disease**

The results showed that all animals kept on a normal diet developed high cholesterol blood levels compared to control mice. However, the group of animals on a diet enriched with micronutrients had an almost 32% lower total blood cholesterol level. You can see on this graph that the LDL, called bad cholesterol, was also lower by 65% in mice on micronutrient-rich

diets. All these were possible in the animals which had a genetic background predisposing them to high cholesterol. Even more, the ratio of HDL to LDL cholesterol (which is more indicative than LDL, of developing health problems) increased by almost 60% suggesting a significant decrease in heart disease risk.



In addition to testing blood cholesterol levels we also examined the arteries of these animals.

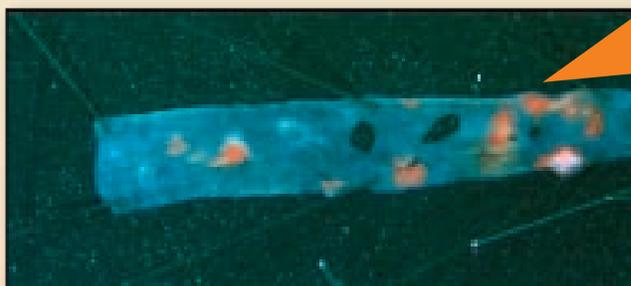
You can see that the artery of an animal kept on a normal diet has lots of fatty deposits, which are visible as orange/red patches. In contrast, the artery isolated

from an animal fed a micronutrient enriched diet, seen at the bottom picture, looks different. It appears more transparent and with significantly smaller areas of fatty deposits. This dramatic improvement in the health status of the arteries was possible just by supplementing the diet with selected micronutrients.

Decreased cholesterol deposits in the presence of micronutrients



Without
micronutrients



Plus
micronutrients

In addition, we observed that in the arteries of mice on a micronutrient enriched diet the vascular haemorrhages were present much less frequently, compared to mice kept on a standard diet. Less

haemorrhages and blot clots means a lower risk of heart attacks and strokes.

Micronutrients prevent arterial wall hemorrhaging



Vascular Hemorrhages



Normal blood vessel

Another frequent cause of stroke and other serious problems is when a vascular aneurysm develops. This happens when a part of a blood vessel wall weakens and under the pressure of blood flow it forms bulging structures. This resembles what happens when you

blow a bubble. If such a vascular balloon bursts in the brain, heart or in other organs it causes bleeding with severe and often life threatening consequences.

Micronutrients and Vascular Aneurysm



We investigated whether adding a specific synergy of micronutrients to the diet can affect the frequency of aneurisms. The results confirmed that an aneurism was more often present in animals on a normal diet than those on a micronutrient enriched diet. As an example, on the left hand side you can see a blood ves-

sel from an animal on a control diet that shows a bulging structure identified as an aneurysm. In contrast, the animals fed a micronutrients supplemented diet had mostly healthy and aneurysm-free arteries, like the one shown on the right picture.

Decreased aneurysm in the presence of micronutrients



Vascular Aneurysm



Normal blood vessel

What do these results tell us? They indicate that even in the case of multiple risk factors for heart disease, such as the combination of genetic predisposition for heart disease and high blood pressure, the specific

synergy of micronutrients has a positive impact on many of these factors. It is time that we take advantage of this knowledge.

What do these results mean?

**Micronutrients have many benefits
in decreasing risk of heart disease
in the presence of multiple risk
factors, even if they relate to our
genetic predisposition!**

Let's turn to another frightening disease, cancer which, after almost seven decades of using chemotherapy, still remains the second leading cause of death.

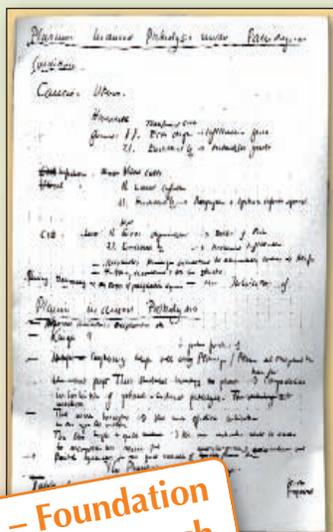
We are very proud of our progress in this research area which has important implications for human health.

It all started from Dr Rath's discovery published in 1992 that defined main biological targets and specified key natural compounds for controlling the spread of cancer. After opening our own research Institute in

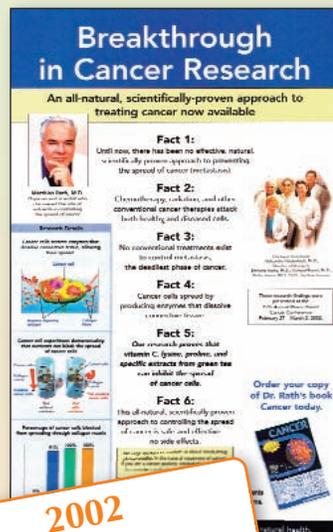
California we made cancer our first and most important project. We did not have to wait long for the first success.

In 2002, our research team made a public announcement in USA Today, a newspaper with a worldwide distribution, that a natural control of cancer is possible. From that time on research interests in natural approaches to cancer intensified immensely and it is remarkable that today there are about 100 clinical trials testing various natural components in therapy and prevention of cancer!

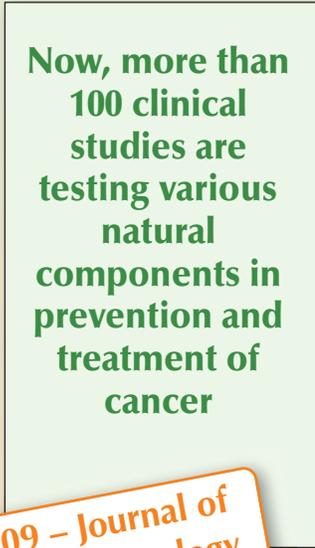
Breakthrough in cancer research



1992 – Foundation of cancer research



2002 USA Today



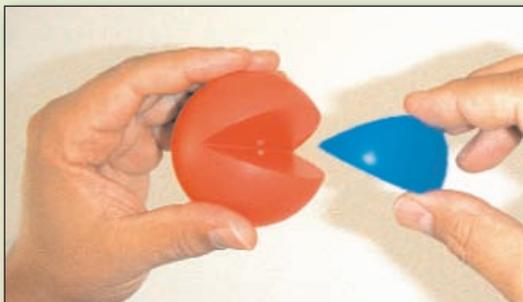
2009 – Journal of Clinical Oncology

How does our direction in cancer differ from both conventional and other natural approaches?

First, it is based on science and on selection of the precise biological target, which is blocking the enzymes that all cancer cells use to destroy collagen in order to spread in the body and grow tumors.

Also, instead of toxic substances we use natural components of documented safety and health benefits. We carefully selected these nutrients and combined them in a synergistically acting team in order to widen the biological impact of their effects in the body's cells. These nutrients include vitamin C, selected amino acids, minerals and also plant components, such as EGCG from green tea.

**Our unique approach:
Natural blockage of collagen digesting enzymes
as the foundation of effective cancer control**



- **Vitamin C**
- **Lysine**
- **Proline**
- **EGCG**
- **N-Acetyl-Cysteine**
- **Arginine**
- **Selenium**
- **Copper**
- **Manganese**

In more than 50 published scientific studies conducted on almost 40 cancer cell types we documented that this synergy of micronutrients has multiple effects on cancer. These micronutrients can:

- Inhibit cancer cells growth and the expansion of tumors
- Curtail metastasis
- Decrease the formation of blood vessels that feed tumors
- Trigger natural death of cancer cells in a process called apoptosis
- In addition, these nutrients can control inflammatory reactions which are important in both cancer initiation and progression.

The synergy of micronutrients can control the key mechanisms of cancer



- **Inhibit tumor growth**
- **Curb cancer metastasis**
- **Decrease blood vessel growth in tumors (anti-angiogenic)**
- **Trigger cancer cell death**
- **Control inflammation**

ALL confirmed on almost 40 types of cancer cells and documented in more than 50 scientific studies published by our Institute

Although this micronutrient composition has demonstrated such powerful effects in stopping cancer we have been working on further improving its effective-

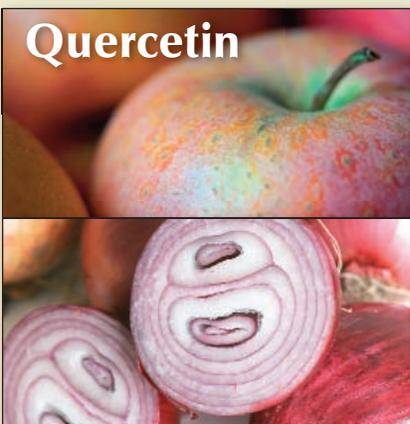
ness. As a result, we were able to achieve a superior anti-cancer efficacy by including in this mixture a Quercetin, another plant component.

Enhanced synergy effects with Quercetin

EGCG



Quercetin



- Vitamin C
- Lysine
- Proline
- EGCG
- Quercetin
- N-Acetyl-Cysteine
- Arginine
- Selenium
- Copper
- Manganese

Some of you may ask: What is Quercetin? Quercetin, also known as vitamin P, belongs to a group of plant-derived nutrients known as flavonoids. It can be found in apples, onions, tomatoes (did you know that organically grown tomatoes can have about 79% more quercetin than those grown conventionally) and many other fruits and vegetables. Many people suffering from allergies have been taking quercetin because of

its strong anti-histamine properties. Quercetin has demonstrated a variety of other health benefits, such as in diabetes, in strengthening blood vessels and decreasing blood viscosity which is important in preventing blood clots. It has protective effects on the liver and it can counteract detrimental effects of estrogen. We studied this compound in cancer because of its demonstrated anti-cancer potential.

What is Quercetin?



A natural plant component (also called vitamin P) with demonstrated many health benefits

- **Anti-histamine**
(allergies, asthma, hay fever)
- **Cardiovascular health**
(capillary fragility, anti-thrombotic)
- **Diabetes and its complications**
(i.e. cataracts)
- **Liver protection**
- **Anti-estrogenic properties**
- **Anti-cancer**

Organically grown tomatoes have 79% more quercetin than those grown conventionally:
J Agric and Food Chem 2007; 55; 2274-79

We observed that when we combined Quercetin with our micronutrient mixture containing EGCG, vitamin C, lysine, proline and other compounds, this biological synergy was very effective in inhibiting the growth of already developed breast tumors in rats.

This graph illustrates the effectiveness of this mixture compared to green tea extract. The blue line shows the growth of chemically induced breast tumors in animals kept on their normal diets. As you can see, the size of these tumors was steadily increasing over time.

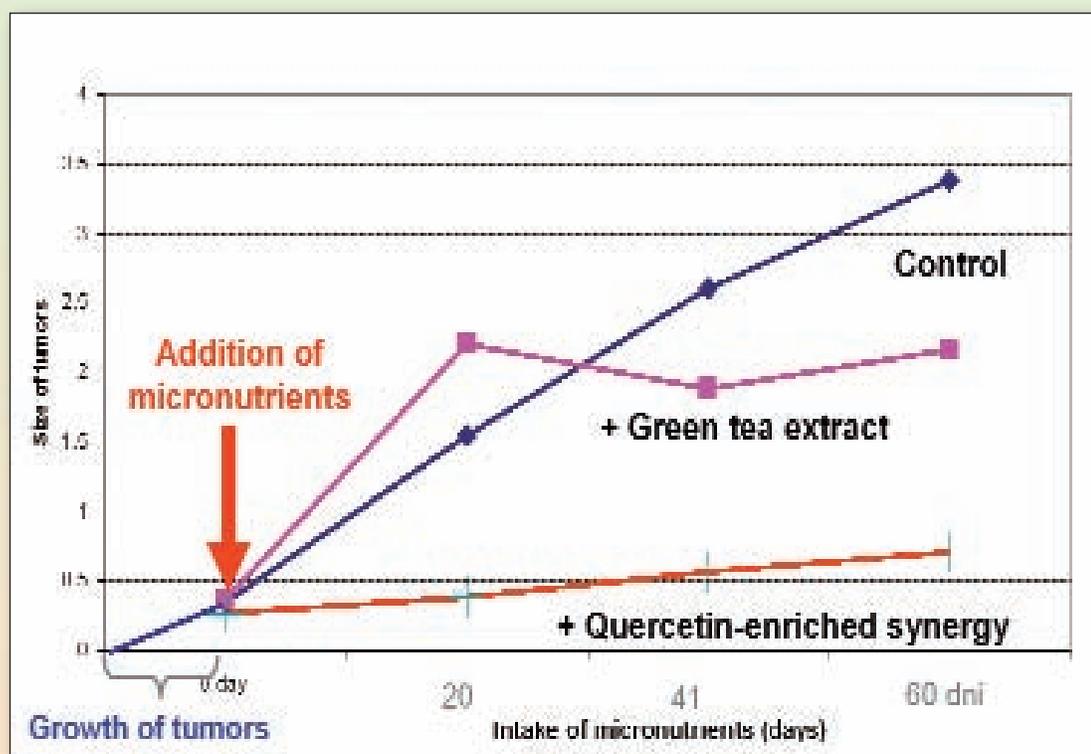
The pink line shows how breast tumors grew in the animals who were placed on a diet supplemented with green tea extract after their tumors developed.

You can see that just a simple green tea extract supplementation could decrease the progression of breast tumors by about 40%.

The bottom line illustrates what happens when the animals which developed breast tumors were transferred to a diet supplemented with our nutrient synergy plus Quercetine. This line is almost flat indicating that after this dietary intervention, breast cancer progression was minimal. At the end of the experiment the size of tumors in these rats was about 86% smaller than breast tumors developed in animals consuming their normal diets.

But this is not all.

Micronutrient synergy is effective against already developed breast tumors



Almost all tumors that developed in animals kept on control diets were malignant and only 4% were benign. This is in sharp contrast to the results seen in the animals who were transferred to the Quercetin-enriched synergy diet after their tumors became noticeable. There, less than one-third of all breast tumors

were diagnosed as malignant, however, the majority, about 71%, were benign tumors and as such were not life threatening. This is a very encouraging result indicating that dietary intervention even after developing tumors can have such a benefit in decreasing malignancy.

Synergy of micronutrients significantly reduces malignancy of breast tumors

	Tumor type	
	Benign	Aggressive
Normal diet	4%	96%
Micronutrient Synergy with Quercetin	71%	29%

In this table you can see other anti-cancer effects of nutrient synergy used either with or without added Quercetin.

As you can see, on average each animal kept on a control diet developed about 4 tumors. However, the rats with breast tumors who were transferred to a diet supplemented with vitamin C, Lysine, proline, EGCG and other compounds, had much fewer tumors at the end of the study – there was on average 1.4 tumors per animal. In the animals supplemented with the same nutrients plus quercetin, we could detect only 1 tumor per animal.

In a control group there were no animals completely free from cancer, while about 57% of all animals

consuming micronutrient enriched diets, either with or without quercetin, were cancer free – no tumors detected.

Quercetin had a significant effect on decreasing the frequency of high-grade cancers. We were excited to see that none of the rats taking quercetin in a diet developed any advanced, grade III carcinomas. About 28 % of rats on micronutrients without Quercetin had Grade III carcinomas. However, this was still much less compared to the rats on a control diet – 100% of them developed Grade III cancers.

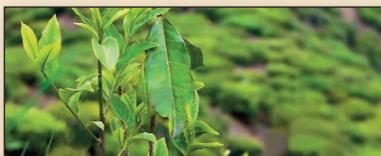
All these results show that quercetin can further enhance the anti-cancer efficacy of our nutrient synergy.

Quercetin enhances anti-cancer effects of micronutrient synergy

	Total number of tumors/animal	Animals without tumors	High grade (III) carcinomas developed in
Control	4	4%	100%
Without Quercetin	1.4	57%	28%
PLUS Quercetin	1	57%	0%

In addition to quercetin we have been including in our studies other plant components, including sulphur and nitrogen-rich extracts from cruciferous vegetables such as cabbage, broccoli and cauliflower. Also, resveratrol present in grapes, curcumin – the major component of an Indian spice called turmeric- and of course green tea. Currently, we are investigating their anti-cancer and other health benefits when applied in biological synergy with other nutrients and the results have been very encouraging.

Many plant components have multiple health benefits, including anti-cancer effects



- **Curcumin**
- **Resveratrol**
- **Extracts from cruciferous vegetables**
- **Green tea**

We documented the effectiveness of our micronutrient synergy in cancer in more than 50 published scientific studies and presented our results at numerous scientific and medical conferences. Today other researchers in the field are recognizing our leadership in the area of natural health.

But the most valued recognition of our progress is about 100 clinical trials that are currently pending evaluating both therapeutic and preventive potential of natural substances.



The effectiveness of nutrient synergy in controlling cancer has been documented in more than 50 scientific studies published by the Dr. Rath Research Institute

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Notes

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