

**Your Premier Information Resource for Lone Atrial Fibrillation
Publisher: Hans R. Larsen MSc ChE**

VIRTUAL LAF CONFERENCE

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SUBJECT: Nattokinase Update & Summary- Part I

Introduction

The focus of this Summary is to clarify confusion or conflicting information as presented in the original Nattokinase Interim Survey. It was just that...a survey of available information. Now we have some refinement and direction, thanks to Ralph Holsworth, Jr., DO, for his generous sharing of time and information. Thanks also to audio tapes from two of his convention presentations; every statement in this report comes from Dr. Holsworth's clinical experience and research.

First order of priority is understanding that while we are investigating a safe and natural alternative to warfarin or aspirin for the prevention of potential thrombosis risk during atrial fibrillation, this issue, while extremely important, is only one part of another very important health issue.

Thrombosis prevention can't be discussed without understanding why it occurs in the first place— whether or not lone atrial fibrillation is a factor. Strokes and heart attacks are second to cancer in causes of death.

We must become educated in how blood viscosity (thickness), inflammation and coagulation dysfunctions (in this case, hypercoagulation) affect our health. This will be covered in Part 2 of this Update and Summary.

CLARIFICATIONS to ORIGINAL SURVEY

Natto the Food –and Coumadin

This remains the same. Those on warfarin should not consume the bean curd, Natto, due to the high vitamin K content. People with known blood clotting dysfunction or bleeding disorders should not take nattokinase or natto.

Nattokinase and Coumadin

As long as there is no vitamin K in the nattokinase product.... and this would be the Natural Super Kinase – Spray Dried, (NSK-SD) product mentioned in the Interim Survey...which has been isolated and purified of vitamin K, people on warfarin (Coumadin) can take nattokinase.

This is 180 degrees from the information and cautionary warnings posted initially and from what you will see on most product labels. Dr. Holsworth says it will not affect the INR numbers or have any adverse bleeding consequences. Use the enzyme as you would use the vegetables and leafy greens you already include in your diet and keep the intake/dosage consistent.

Remember, the key here is the pure, isolated enzyme powder with the NSK-SD designation only because it is assayed for purity and safety. Other brands may not be pure and probably contain the impurity, vitamin K.

Hopefully, unless there is a critical reason to remain on warfarin (Coumadin), most people can transition off warfarin

and aspirin and use nattokinase.

As we've discussed previously, don't expect that your doctor or cardiologist will go along with this because the standard of care dictates the warfarin (Coumadin) or aspirin protocol. The medical/legal liability situation ties their hands. However, holistic or alt med doctors frequently understand the whole nattokinase picture and are willing to supervise the transition because they know NK is safe and effective.

Soy Allergies

The specific form discussed in this post....purified NSK SD – is safe for people with soy sensitivities but people with extreme soy allergies resulting in anaphylactic shock should NOT take nattokinase.

Safety

No change from the original report. Both the food and the enzyme, nattokinase (NK), remain safe for afibbers and anyone else wishing to take advantage of a natural supplement by enhancing their fibrinolytic system and reduce the risk of thrombosis.

Nattokinase is contraindicated for individuals with a history of bleeding tendency or with conditions associated with bleeding.

Remember, the enzyme, NK, does not act on or influence the clotting cascade, but rather up-regulates or enhances the body's ability to produce its own endogenous enzymes that promote fibrinolysis.

For clarity, remember, also that warfarin (Coumadin) works by interfering with the action of vitamin K. Aspirin works on yet another mechanism. NK does not function at all in these two separate clotting pathways.

[On the topic of warfarin (Coumadin)... Physiologically, warfarin (Coumadin) does not actually decrease thickness of the blood, but does allow you to bleed easier.]

There is no lethal dose. Dr. Holsworth says he has taken 30, 40, 50 capsules at a time of pure isolated nattokinase (NSK- SD) with no side effects including bowel intolerance. He says in rare cases, there will be epistaxis (nosebleed) which is traced to concurrent use of other anti-platelet aggregation supplements such as ginkgo, bromelain, Omega 3 fish oils, garlic and as soon as those are reduced in quantity, no further bleeding occurs

WHAT'S AN IDEAL THROMBOLYTIC AGENT – OR - PROPERTIES OF NATTOKINASE

Dr. Holsworth describes the actions of nattokinase as "Nurturing Nature". The most therapeutic perspective property of NK is the indirect effect.

- 1) inhibits PAI-1 (plasminogen activation inhibitor-1)
- 2) upregulates individual's own tissue plasminogen activator (tPA) anti-clotting mechanism
- 3) converts endogenous pro-urokinase to urokinase
- 4) has small anti-platelet activity – similar to garlic or onions

Lyses cross-linked or dysfunctional fibrin. NK is 6 times more efficient than our own plasmin, but does not compete with cleavage of fibrinogen, so doesn't attack anything that isn't dysfunctional. Fibrin is the single-most causative agent that makes blood thick.

- No direct tPA activity – no direct competition in clotting
- No degradation of albumin by NK

-Said to act like an Angiotensin Converting Enzyme inhibitor (ACEi). Keeps angiotensin II down and in rat studies, thins the neo-intimal layer of inflamed blood vessels. He is not impressed with the clinical studies suggesting the ACEi effect; but clinically, it works as an anti-hypertensive medicine. He does find that people on antihypertensives decrease the amount of high blood pressure medication or eliminate them all together in 7 – 14 days.

Dr Holsworth cautions that individuals on high blood pressure medicines, closely monitor their blood pressure and notify their primary care physician about any lowering of their blood pressure.

Dr. Holsworth has seen significant decreases of 10-20 points of systolic and diastolic blood pressures within 7 days of starting nattokinase.

-Linked to circadian rhythm. PAI-1 inhibits the ability to create plasmin. Clots occur early in the a.m. predominantly and, therefore, increase the stroke or heart attack incidence.

Breaking down existing clots...

NK has only slight or limited Pac Man capabilities to “eat away” directly at existing clots, but rather “nurtures nature” by enhancing our own endogenous pro-fibrinolytic system. Small direct effect of less than 10% efficacy similar to plasmin where it works directly on a clot – Pac Man style.

It will not break loose a clot.

What is an ideal thrombolytic agent?

- Rapid – NK is effective within 4 hours PO (oral) administration and has significant fibrinolytic activity in blood vs. tPA which has that 3-hour grace period to initiate...so there is only one hour differential in ischemia situation. Additionally, tPA has short duration of effectiveness and must be taken intravenously..
- Duration – maintain patency of vasculature – no early reclosures.
- Sustained duration of action - half-life of NK is 8 – 12 hours. After tPA administration, patients are at an increased risk for the next 14 – 48 hours where patients are susceptible and have an increased thrombophilic state secondary to tPA IV (as in rebound effect).
- Specific - no shotgun effect of cleaving any and all fibrin in the body... Specific or targeted...that's what NK does with cross-linked fibrin.
- Thrombosis-specific...doesn't adversely affect coagulation factors or the coagulation cascade
- Upregulates body's own plasminogen system.
- Low risk of hemorrhage - isolated cases of epistaxis (nose bleeds) – compounded by 4 – 5 other anti-platelet agents...garlic ginkgo, fish oil. Reduce intake.
- Absence of systemic side effects.
- Caution – if on antihypertensives, check blood pressure in 7 – 10 days. NK can quickly correct the body's Hemorheology. Blood pressure medicines may have to be titrated down so individual is not over-medicated or discontinue use.
- -Low cost
- Per oral (P.O.) convenience (as opposed to IV).

Presurgical use of Nattokinase

Anyone having surgery should go off the night before and resume when first meal is consumed.

For young healthy people who go in for elective surgery, childbirth or any procedure below the waist, it is especially helpful for them to be using nattokinase to prevent the common occurrence of deep vein thrombosis (DVT) or worse,

pulmonary embolism.

Stroke Recovery

There is a study with heparin as a control. Those receiving NK were found to regain neurological functions.

Diabetics

NK especially useful in diabetics whose blood is always highly oxidized (thick). They also have fibrinolytic dysfunction which increases their risk for cardiovascular problems, heart attack and stroke risk. Thick or viscous blood denudes the endothelial lining of blood vessels. More on this in Part 2.

Enteric Coating

In the early stages of research for preventing thrombosis, Dr. Sumi worked with urokinase and found it would not survive stomach acid. Therefore, and initially, when he began work with NK, he thought it would also not survive the acid. However, he learned that it does survive and very well, at that.

There is no need for enteric coating if the purified and specially-prepared form of nattokinase (NSK-SD) is used. In fact, enteric coating can be a deterrent to proper intestinal absorption.

NK is stable in a pH of 4 to 10 and although stomach acid pH is more in the range of 2, NK is water soluble and binds with alpha 2 macroglobulin receptor sites and is carried along intact, ready for absorption. Alpha 2 macroglobulin receptors are part of the immune system – functioning along with macrophages and monocytes--and are present throughout the body. This means NK is readily carried throughout the body.

Of interest is that of extremity microcirculation. Dr. Holsworth says people on NK will begin to notice they can grow fingernails once subcellular circulation is free and flowing again (microperfusions: the subcellular level where exchange of metabolic waste and nutrients occur)--further evidence that NSK-SD does survive stomach acid and is absorbed throughout the body. In diabetics, amputations of limbs may be circumvented through the use of NK.

Preferred Form of NK...NSK-SD

Dr. Holsworth extensively researched all possible enzymes to see which had the best possible properties. He determined that none was equal or even close to that of NK. He has found it is also important to take only the pure enzyme powder that is not combined with other enzymes or enhancers since other enzymes may not stabilize the NK and lessen efficacy of one or all.

The only source of nattokinase is from microbial fermentation and not fungal sources.

Dr. Holsworth has supported and studied the development and testing of NSK-SD™ for safety and efficacy. This isolated, purified form has the highest nattokinase activity available (>20,000 FU/gram) and the largest human clinical trials to date.

The NSK-SD patented formulation has no vitamin K and is the only form tested for safety.

It is recommended to take the NSK-SD form of NK with meals, three times a day – every 8 hours.

NSK-SD is standardized to contain a minimum of 20,000 FU (fibrinolytic units) per gram.

COMPARISON OF WORLD NATTOKINASE BRANDS

With the benchmark measurement of delivering 20,000 FU of activity, 9 brands were analyzed for content and Fibrin Units of activity. Results:

NSK-SD – 20,000 FU
NSK-FD – 13,000 FU

The remaining seven manufacturers' products were found to contain 190, 280, 492, 921, 7310, 584 and zero of fibrin units of activity per gram.

Activities vary enormously from one brand to another.

The enzyme to take delivers 20,000 FU/gram and has no vitamin K.

Where to buy NSK SD

Dr. Holsworth has arranged for members of the Afibbers Forum to receive a courtesy discount when ordering from this company.

NZymeCeuticals - 1- 877-460-1600

Brand name: NKinase

Over 20,000 FU of activity/gram of powder. This is equivalent to 20 FU's/mg. of powder.

Two strengths. 36.7 mg or 50 mg. – 90 capsules/bottle

Dose (for both strengths) one (1) capsule three times a day with meals (or every 8 hours) for full 24-hour protection.

36.7 mg. Price \$20.00 plus shipping

50 mg. Price \$27.00 plus shipping

Canadians can find the proper form NSK-SD through Advanced Orthomolecular Research has a brand that is the NSK-SD designation. Go to www.aor.ca

Also – watch for another acceptable product being launched soon by Flora – also a Canadian company.

Dr. Holsworth will be working to help readers in other countries to purchase the effective form of nattokinase.

Dosing

If you take 3 capsules a day of the 36.7 mg... you will receive about 2200 FUs activity a day.

The 50 mg capsule dose three times a day will deliver 3,000 FUs a day.

As stated in the Original Survey article, you need at least 2,000 FU's a day for a preventive dose.

Dr. Sumi recommends 4,000 FUs a day for a therapeutic dose and 6,000 FUs if an individual has any history of transient ischemic attacks and/or ischemic strokes.

Dr. Holsworth recommends a minimum 4,000 FUs a day for Afibbers to decrease occurrence of a stroke.

Remember, the nightly dose is the most critical, so if you miss one, don't let it be the nightly dose.

Refer to the Original Interim Study – the section on PAI-1 so you understand why this is absolutely the most important dose. If you are in active and regular AF, don't forget any doses.

Ordering Instructions

When you place your order, mention you are a member of the Afibber's Forum and read the ordering instructions in the

post by Jackie Burgess.

That should do it! Good luck ordering and enjoying the benefits of NKinase.

THE ROLE OF BLOOD VISCOSITY AND INFLAMMATION IN ATHEROSCLEROSIS & THROMBOSIS

More of the story – The New Emerging Paradigm Shift

The use of this remarkable enzyme fits hand in glove with the emerging new paradigm shift that connects increased blood viscosity and inflammation to atherosclerotic plaque as the source for thrombosis, stroke and heart attacks. This is a shift from the current holding that cholesterol is responsible for cardiovascular disease and mortality. Statistics show that half of the people who have heart attacks also have low cholesterol (according to the American Heart Association). There's obviously more to the story.

A crash course on the causative factors comes from Dr. Holsworth's presentations. He's a master of clarification through analogy which enables everyone, from physician peers to patient, to envision and grasp immediately how these thrombi or clots form and why.

He says in healthy blood vessels, the inner-most lining called the endothelial lining is smooth and slippery, as if it has a Teflon coating. Blood flows smoothly in healthy vessels. But when the blood gets thick and viscous, it has the capacity to irritate and damage this smooth lining.

He asks that we envision a mighty river during flood stages... the water is thick with mud, debris and rocks and in the high-water stages, it erodes the banks, doing damage along the way. The same is true of the lining of blood vessels; blood thick with debris will scrape and tear the smooth lining. This then calls for reparative measures...first inflammation and then protective compounds to shore up the weakness...calcium, cholesterol, fibrin, all go into building up a damaged and weak area. He said the body will do anything to prevent the bursting or rupturing of a damaged blood vessel.

These areas of endothelial damage tend to be where there is more turbulent flow such as the coronary arteries, the aorta where it enters the heart... areas called counter currents or eddies form at flow divides.

Thick blood with turbulent flow initiates a clot.
Consider... blood is a protein; milk is a protein.
Churn milk and you get butter; churn blood, and you make a clot.

So, it is time to address the study of Hemorheology – the physical properties of blood flow and how it affects health. This is hugely important not only for fibbers because we are concerned with blood flow and clotting, but also because unhealthy blood viscosity has far reaching effects on our overall health.

Stay tuned... Part 2 will be forthcoming shortly.

Jackie

References

Treatment of Blood Viscosity with Fibrinolytic Enzymes, Ralph Holsworth, Jr, DO, presentation at the OrthoMolecular Heart Health Symposium, San Francisco, CA, February 2005

Nattokinase and Cardiovascular Health, Ralph Holsworth, Jr. DO, presentation at 7th International Congress of BioEnergetic Medicine, Orlando, FL April, 2003.

This Update & Summary article was edited by Dr. Holsworth – 4/05.

Ralph E. Holsworth, Jr. D.O., Lt. Commander, US Public Health Service, is a board-certified Osteopathic Family Medicine Physician. Has been practicing with emphasis in functional and integrative medicine for over five years. He has a specific interest in enzyme therapy for ten years. He is expanding clinical and laboratory research on nattokinase. Dr. Holsworth's specific interest is the effect of nattokinase on the human blood flow. Recent laboratory studies at the Keck School of Medicine, USCLA validate Dr. Holsworth's earlier clinical findings regarding the therapeutic effect of nattokinase. Dr. Holsworth meets with Dr. Sumi annually and Japan BioScience Laboratories to collaborate on the continuing nattokinase research. He is a member of the Japan Nattokinase Research Association and a Fellow of the International Academy of Clinical and Applied Thrombosis and Hemostasis. Dr. Holsworth is identified as the leading clinical researcher on nattokinase.

Hi Jackie,

I'm just getting updated on Nattokinase, and am wondering what you might think about this. (After reading this I would tend to use caution when saying one can transition safely from coumadin.)

These are questions from people concerning Nattokinase and answers from Dr. Stephan Moll, Director of the Thrombophilia Program at the Carolina Cardiovascular Biology Center, Dept of Medicine, Division of Hematology, UNC, Chapel Hill, NC:

Nattokinase

Q1: "The subject of Nattokinase seems to have grown over the past year. Seems that a lot of folks are jumping off the coumadin band wagon to take Nattokinase (or Natto) as an anticoagulant. Do you have any knowledge of Nattokinase being a valid anticoagulant?"

A1: *Nattokinase may have activity in preventing blood clots, but due to the lack of clinical studies (except for one of limited quality) it can not be concluded that it is a valid anticoagulant.*

Q2: "Several people on the list at the factor V web site are using Nattokinase as a clot dissolver along with coumadin and may be tapering down to just Natto. The claim is that it enhances the body's natural ability to fight blood clots in several different ways. Because it so closely resembles plasmin, it dissolves fibrin directly. Do you have any opinions on this soy product?"

A2: *While Nattokinase may have some potential to protect from blood clots, it has not been appropriately studied. Any comments and conclusions that "it is effective in preventing blood clots in humans" are, at present, speculation, and any claim that one should consider "using warfarin and Nattokinase together and titrate the warfarin downward" to "decrease the harmful effects of warfarin while maintaining a safer level of anticoagulation with the positive effects of nattokinase" (reference 8) are clinically and scientifically unsound. Nattokinase is not a substitute for warfarin. If an individual takes it, he/she should not count on it having any clinical effect.*

Q3: "Combination therapy with both warfarin and nattokinase can provide increased prophylaxis and minimize the negative attributes of solitaire warfarin treatment".

A3: *This comment by Ralph Holsworth, Jr., D.O. (reference 8) lacks backing by scientific clinical data - no clinical study has been done to support this statement - and is, in my opinion, inappropriate and irresponsible.*

Nattokinase is a soybean food content. It is a 275 amino acid peptide. It is said to have similar clot-dissolving abilities as does plasmin, an enzyme that we all have in our blood as our natural defense mechanism to dissolve unwanted blood clots. The "clot busters" used in clinical medicine (tPA=tissue plasminogen activator, streptokinase, urokinase, etc) to dissolve blood clots that have led to heart attacks, strokes, pulmonary embolism or deep vein thrombosis, all

work through enhancing plasmin's action. They have to be given intravenously, because they are not active when given orally.

There are some research data that indicate that orally taken Nattokinase increases the clot dissolving activities (= fibrinolytic activity) of blood in animals and human volunteers and that it suppresses clot formation and enhances clot resolution in animals. However, to my knowledge, only one clinical study has been performed to assess whether Nattokinase has any real benefit in the prevention of blood clots in humans. In that study (reference: Cesarone 2003) Nattokinase or placebo were given to individuals prior to long distance (7-8 hours) flights. Of the 92 individuals in the placebo group 7 developed a clot, all without symptoms, discovered by ultrasound; of the 94 individuals in the Nattokinase group none developed a clot. Main flaw of the study, limiting the usefulness of its conclusions, is, that the publication does not indicate whether this was a double-blinded study, or, at least, an investigator-blinded study. A non-blinded study has the potential for bias, limiting the validity of its findings and conclusions.

I think it is fair to conclude at present that Nattokinase may have some potential to protect from blood clots. However, it has not been appropriately studied in humans. Nattokinase is not a substitute for warfarin! If you take it - don't count on it having any clinical effect. It has also not been studied regarding its safety profile, particularly when taken together with warfarin or aspirin. .

Jim W.

References:

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Urano T et al: The profibrinolytic enzyme subtilisin NAT purified from *Bacillus subtilis* cleaves and inactivates plasminogen activator inhibitor type I. *J Biol Chem* 2001;27:24690-6.

Suzuki Y et al.: Dietary supplementation of fermented soybean, natto, suppresses intimal thickening and modulates the lysis of mural thrombi after endothelial injury in rat femoral artery. *Life Sci* 2003;73:1289-1298.

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Cesarone MR et al.: Prevention of venous thrombosis in long-haul flights with Flite Tabs: The LONG-FLITE randomized, controlled trial. *Angiology* 2003;54:T1-T9.

Ralph E. Holsworth, D.O.: The use of Nattokinase in combination with low-dose warfarin (Coumadin). *Focus* 2003 (May), page 3: www.allergyresearchgroup.com/news/letters/ARGFocus_May2003_GreenTea.pdf

Jackie, are any of the products iHerb carries suitable? \$27 plus shipping is a little pricey for me.

PeggyM

Jim - I saw the web article and notation you bring up here quite some time ago.

I don't feel that the author is up to date with the recent studies and I feel completely comfortable with what I've posted with Dr. Holsworth's approval.

He has a clinical practice and does transition patients from warfarin to nattokinase, He is and has conducted clinical studies. He's on the cutting edge of research with nattokinase as well as the new information concerning vitamin K2. He mentioned he had recently met with Merck and Bristol Meyers.

And, of course, he's presented his nattokinase to the FDA to have it approved as a medical food. I believe there will soon be a product that will come out under that designation.

However, since it is just one expert's opinion, we all may reserve the right to wait and watch for further developments.

My experience with the product that isn't the one he recommends - that is the Naturally NK 1500... was convincing enough for me so I can hardly wait to try the powder that is not enteric coated and has the full FU activity to see what else will improve in my body. Due to the shingles outbreak, I have elevated fibrinogen that remains elevated. When I try this recommended powder, I'll be able to make judgment as to efficacy when I compare lab results.

Thanks for your input.

Jackie

Peggy - as I recall the answer is 'no' but you'll have to go to the iherb website and call up each product label to check if it contains the NSK-SD pure isolated form.

Pricey is when you pay for a product that doesn't contain what's on the label and you may not be receiving the activity/protection you think you are getting.

Other sources of NSK-SD - the purified form of nattokinase... can be found at Allergy Research Group, Pure Prescriptions, and Adian Products.

They all have web pages that you can find in a Google. I haven't gone there to compare pricing.

Jackie

I received an email from a reader who wanted to know if Dr. Holsworth had an interest in the NzymeCeutical source recommended. Since this was a good question, I'm posting my answer to him for all of you here to read....

....."He does have affiliations with the company mentioned...but you can also get the same "preferred" enzyme through Allergy Research, Pure Prescriptions and Adian Products. Each has a website. I think the courtesy discount from NzymeCeuticals may take the price down to be competitive...but by all means check it out.

Dr. Holsworth works for the government in the Public Hospital System. He's also works with the NIH.

My impression is that he is involved with this company to insure that the proper enzyme is available to physicians who want to use the very safest, best and most effective product.

He opened up ordering to the public as a courtesy to me and to the Afibbers Forum. Normally they sell to medical professionals... and since I am one, I had planned to use his source anyway.

I'll post alternative information on the BB....although it already is in the original Interim Survey. I guess I'm just accustomed to physicians being associated with quality products. Many of them do so their patients can access the reliable ones rather than throwing a dart or buying by cost-related comparisons and ending up with inferior products. As in my case, my functional medicine MD has Metagenics, Thorne and Biotics on hand because she finds certain products of each line highly effective and wants to see results with those specific nutrients. I don't give it a second thought...but now that you mention it, I can see how some might be suspicious or put off by it. Thanks, Jackie"

Be sure to check out those other websites.

Jackie

Jackie,

You're right. That article was written 11 months ago.

Could you tell me where I could find recent studies that have been done by clinicians other than Holsworth? Also, I would be interested in reading Holsworth's clinical studies where he took patients off of coumadin, and transferred to natto. I'm assuming natto doesn't affect INR levels, so I am sure he must have a way to document coagulation ability of patients blood. I would very much like to see his clinical findings.

Obviously he is a believer in natto, and has scientific proof that natto is better & safer than coumadin, otherwise he wouldn't risk facing lawsuits from patients having strokes after being withdrawn from coumadin.

Thanks,

Jim

Peggy,

The Allergy Research nattokinase (NattoZyme) is now available in my web vitamin store (from iherb). However, depending on the shipping cost for the NZymeCeuticals product recommended by Jackie it may come out a bit more expensive even at a 20% discount and no shipping cost. However, as far as I can make out the quality of the two products is identical.

Hans

Jim - I'm not even sure that there are published data on his own clinical studies. There are quite a few Japanese studies. He sent me some studies and references...let me sort through those to see if they will answer your request.

I agree. We should be able to look at studies. The problem is, apparently, all these nattokinase studies are privately funded....since funding dollars for large-scale studies go where there is patent potential. Since you can't patent a natural product, Big Pharma has little interest in funding those studies.

Dr. Holsworth said ..."Big Pharma is only dreaming of a product that does what NK does today. They would love to somehow have something like what NK can do. NK is far ahead of Pharma because it is natural, powerful and available. "

The original interim survey discussed the fact that nattokinase doesn't impact INR levels and can't be tested because it doesn't work on that portion of the clotting cascade. He watches Protimes until they are transitioned and he commented to me that when he uses nattokinase along with Coumadin for DVT, he keeps the Protime up at about 18. But, Protime isn't a measurement of how NK is working. They can do fibrin degradation products to see if it is working.

It's difficult to grasp at first, but NK does not impact any of the clotting mechanisms. Review again the post I just did... (the properties)...it upregulates the body's own natural fibrinolytic systems...he calls it...Nurturing Nature. That's the beauty of the enzyme.

I agree, he must feel comfortable. He works in the Public Hospital system on several of the Indian Reservations in New Mexico where a major condition with those patients is metabolic dysfunction and diabetes so this gives him plenty of opportunity to use nattokinase to help clear up the blocked circulation that results from dysfunctional fibrinolysis that is prevalent in those conditions. I'm sure he has excellent documentation, but this isn't like a double-blind, crossover study. I hear what you are saying.

I also feel he is not the least bit worried that patients on nattokinase will suffer from thrombosis and know he's also concerned about the long-term side effects of Coumadin.

As I said initially, as this unfolds, we'll learn more. I secured some audio tapes from the OrthoMolecular Convention in CA this past February. Several presenters talked about the use of enzymes and nattokinase as we are discussing here. It is well accepted in those circles as a option whose time has come.

I'll get back to you if I find anything meaningful that I am free to share with you. Some of the data he shared is confidential at this time. I mentioned he's working on FDA approval and this could be part of it.

Good to hear from you; hope you are enjoying life in NSR.

Best regards,

Jackie

Hans - Thanks for this.

Allergy Research Group's product is the approved purified enzyme powder. So great that iherb has it! If I hadn't been so lazy, I'd have looked it up on the site earlier.

If this message repeats with a similar message, something glitched. I thought I posted a response earlier and it didn't show up.

Jackie

Hi Jackie,

I guess I am concerned about patients with AF, people with a history of strokes, and other possible life threatening conditions, coming off coumadin and totally going on nattokinase because of one man's opinion. Truth is there are no human studies which prove unequivocally that natto will keep these people from a cardiovascular accident. Personally, if I were on coumadin, I would be a little nervous switching over. At this point, I wouldn't do it until I could see actual clinical studies. I find it hard to believe that the government would back Holsworth in actually taking patients off coumadin who were at great risk of throwing a clot, eg., AF, history of strokes, etc. Especially when the medical community does not recognize natto as the standard of treatment in such cases. Here is another article basically stating the same thing but more recent. Note the last part:

Posted on Mon, Apr. 18, 2005

By Mitchell Hecht, MD
Knight Ridder News Service

Clot-dissolving supplement lacks sufficient study

Q: What are your thoughts on the natural clot-dissolving supplement Nattokinase? My doctor has given it to me for 18 months without any side effects or blood testing (unlike Coumadin).

A: I have no personal experience with Nattokinase, but I did research it. Nattokinase is sold as a supplement to "support cardiovascular health" in healthy folks, and is not a replacement for a traditional blood thinner such as Coumadin. Since it is sold as a supplement, it lacks the scrutiny of formal Food and Drug Administration study.

The Nattokinase enzyme is formed by bacteria acting on boiled soybean. Studies in culture dishes have shown how this enzyme dissolves blood clots. Now sold in a purified form in capsules, it has reportedly been used for more than 1,000 years in Japan as a folk remedy for heart disease.

While its claims are intriguing, I could find only two human studies that have looked at the effectiveness of Nattokinase - both in healthy individuals. The first study involved only 12 healthy volunteers tracked over an eight-hour period. The second study involved 186 healthy individuals - 94 given Nattokinase; 92 given placebo before several long-distance flights. Seven folks in the placebo group reportedly developed leg clots; none in the treated group developed leg clots.

The study's main flaw was that it was non-blinded, meaning that the investigators and/or volunteers knew in advance that they were receiving Nattokinase or placebo.

I could find no study in folks with atrial fibrillation, recent leg clots, stroke, or other diseases. To replace or add Nattokinase for such patients would be risky.

Nattokinase does sound intriguing, but I'd like to see more human studies before I can endorse it.

Jim

Mitchell Hecht is a physician specializing in internal medicine. Send questions to him at: "Ask Dr. H.," Box 767787, Atlanta, Ga. 30076. Due to the large volume of mail received, personal replies are not possible

Hans,

I'm on coumadin and the product you mentioned doesn't say NSK-SD; is that mean I shouldn't be taking it due to vitamin K? Please advice.

Thanks

Mira

Jim,

My keen interest in nattokinase stems from my understanding that not only does Coumadin, itself, present significant risks, but that its efficacy is highly suspect. It seems there's a lot of medical superstition, wishful thinking and force of habit on the Coumadin side, not to mention the dead weight of the fear of litigation.

Trent

Hi Trent,

I'm wondering, are you on coumadin? If so, will you stop, and now have total faith in the efficacy of natto?

Until I saw actual human clinical studies concerning the efficacy of natto, I would be very leary of stopping coumadin if I had a possible life threatening condition which might subject me to having a stroke. No one wants to take coumadin, and it would be wonderful if natto would do the trick. All I'm saying is, show me the beef. Of course we know there is risk in taking coumadin, but what is the risk in stopping & placing all your faith in natto? Truth is, you do not know.

Also, I have already ordered the NSK-SD(NKinase). It will be interesting to see if my blood pressure goes down by 10 points or more within 7 days. I am sceptical, willing to try, and definitely will report back to the board my own findings in 10 days or so.

Best,

Jim

Jackie,

I have just received an email back from Daiwa Pharmaceutical (www.daiwa-pharm.com and www.nkcp.org) to say that as they don't have an agent in Australia we can buy direct from them. I am waiting for their price posted to Australia. They have NKCP tablets which have minimal vitamin K, 300mgx 120 tablets; I think they also sell the powder. You mentioned this company in your earlier article on NK, what does Dr Holsworth think of their product? I hope that he can convince the medical profession to carry out tests and trials so that this product can become an accepted alternative to Warfarin. I can see it being a long road before this happens as Warfarin is a money machine for drug companies, testing labs and doctors.

Bob

Trent - you're correct in that observation that Coumadin is not a 100% guarantee of no clot formation.

Nattokinase addresses the issue of blood viscosity, which I'll cover in Part 2 - Coumadin does nothing to address that...only interferes with the vitamin K clotting mechanism.

Further, Coumadin fairly quickly calcifies aortas....and I don't believe patients are told that... and I realize right now there is no other option for a prescription medication...that's why Nattokinase is so exciting....and why the FDA was interested in Dr. Holsworth's proposal to have it classified as a medical food designation. Time will tell how this plays out.

Additionally, long-term use of Coumadin contributes to osteoporosis because of the vitamin K inhibition issue.

I'm continuing to correspond with Dr. Holsworth over the issues presented here.... hopefully, he'll have some time to respond.

However, if I were still an afibber and concerned about clotting, I'd be taking the full 6,000 FUs daily recommended of the NSK-SD type product. And I were on Coumadin, I'd at least be combining the dosages and probably weaning off.

Jackie

Mira and all -

The Allergy Research brand available from iherb as mentioned by Hans.... is sold under the name Nutricology...and it is the NSK-SD product.

But remember to follow the dosing instructions for afibbers given in my Summary...which is 6,000 FU daily... which would mean more capsules than is indicated on the labeled directions for Nutricology.

This would mean to get close to the 6000 a day, you'll need to take 1 gel cap.. every 8 hours or three times a day... at their labeled dosage, you'll be slightly under the 6,000 but close. Also remember to take it with meals.

Here's information from their web site:

NattoZyme by Nutricology

Nattokinase NSK-SD™ is isolated, purified and encapsulated nattokinase, an enzyme derived from boiled soybeans and *Bacillus subtilis natto*. Research has shown nattokinase to support healthy coagulation of blood within normal levels and enhance fibrinolytic activity.*

We tested recently introduced products and few meet the standards of Dr. Sumi, the discoverer of nattokinase, and Dr.

Holsworth, the leading U.S. researcher of nattokinase. We offer only the patented NSK-SD™ formulation with no Vitamin K2, the only form that has been tested for safety. Each batch is tested to ensure potency.

NSK-SD™ is a trademark of Japan BioScience Laboratory.

Each 1 softgel contains:

Vitamin E (as D-alpha-Tocopherol) 10 IU
Nattokinase NSK-SD™ (1825 FU) 100 mg

Other ingredients:

Rice bran oil, lecithin, yellow beeswax, turmeric, titanium dioxide.

Suggested use: As a dietary supplement, 1 softgel two times daily initial dose, or as directed by a healthcare practitioner. May be taken with or without food. Take with 8-10 ounces of water. If taken with anticoagulant drugs, use under medical supervision. Contraindicated in any condition associated with bleeding.

iherb's price is \$40.00 for 90 capsules

Jackie

Caution..... it is really important to check the label on products before ordering or consuming to calculate the FUs in each capsule.

I just checked out the 300 quantity of Nutricology to see if the price comparison would be better and noted that particular label cuts down on the FU's and milligrams so be alert when ordering so you know what you are getting.

This quantity of NattoZyme provides 1440 FU at 72 mg. versus the other quantity of 1825 FU/ 100 mg so you get about 400 less in each capsule x 3 a day would be 1200 FUs less than the 90 capsule bottle.

Jackie

Hi Jackie,

I found this breakdown of NK interesting, it is a copy from NKCP Japan. Is the ppm arsenic and heavy metals etc within the FDA guidelines? I know it might be a tall order to ask it of you, but knowing Japan has had heavy metal problems in the "past?" is this just "their" acceptable limits?

Also, if one only takes Flight Tabs "on demand", how come it is not seen to be recommended for NK? I know Flight Tabs derive from tree bark not soy, has that got some reason? Thanks awfully for all you have put into any of this BB.

Take care,

David S, vlaf 67 yy

Specs of NK tabs from NKCP web page:-

Appearance Light yellow powder
Odor No odor or slight fermented odor
Genetically modified ingredients none
Moisture 8% or less
Arsenic 1ppm or less
Heavy Metal 10ppm or less
Aerobic Plate Count 3000FU/g or less
Coliform Bacteria Negative

Protein Produced by B. subtilis natto 90mg/kg or more
Vitamin K2 Content Negligible
Function Protein Stability pH 6.0 - 9.0 / <60°C
B. subtilis natto cell content removed / none

Activity Nattokinase activity was measured by reference to the plasmin substrate (H-D-Val-Leu-Lys-pNA). The activity of 1g is 10 units.

Standard Dose 250-500mg (2-4 tablets) /day

Tablet Ingredients Proprietary extract of Natto Bacilli Culture, microcrystalline cellulose (bulking agent), resistant dextrin (bulking agent), sucrose esters of fatty acids (emulsifier), silicon dioxide (anticaking agent), shellac (tablet coating). These excipients are completely and are necessary to make the NKCP into tablets.

David - When I spoke with Dr. Holsworth, he rattled off a mini-ton of information...he just spewed forth all sorts of data I needed to know...it was difficult to take down all the details (my shorthand is very rusty) and I hated to keep stopping him and asking for a repeat or time out.

From my recall...which has already failed me once on the issue of transitioning patients off Coumadin and onto Natto.... so don't hold me to this... I believe know he said... any enzyme coming from Japan BioScience which is Sumi's group is good. And then, he added, but those enzymes coming from Korea and other Asian sources are apt to be less pure

He didn't clarify ..which impurities - could have meant vitamin K and now that you point out arsenic and other heavy metals.... my thought would be definitely to stay away from any powder that isn't "pure" as the NSK-SD designation indicates.

I think heavy metals at 10 ppm is way too much....but going from memory. I'll try to locate something official...same with arsenic. You could probably locate a table doing a Google search.. that's what I'll have to do.

As to Flight Tabs and these were designed for people who are immobilized during long-haul flights since the incidence of DVT (deep vein thrombosis) is so high in all ages. Since NK is in the blood and working after 4 hours, it makes sense that someone traveling - immobilized - for 8, 12, or 15 hours - would benefit. Example: Remember the young NBC news correspondent in Iraq that died because of DVT...cramped space, undoubtedly dehydration. These are not typical, every-day living conditions and when the second heart - the calf muscles (gastrocs) are not working, the blood gets out in the legs but doesn't get back - therefore - the high incidence of DVT.

I have a friend whose husband travels to China regularly from Cleveland Ohio. He says with the new security rules in place, moving about in the cabin on these long flights is almost impossible. He says you have to remain in your seat at all times. No congregating at the flight attendant station for coffee, etc. Two people can't stand close together anywhere... and if you have to line up for the lav... it has to be spaced out... Even though he flies first class... it is still restrictive. Fortunately, the seat provides foot elevation seats. Immobility is a huge concern for Thrombosis... for travelers complicated by dehydration which always also occurs at high altitudes.

Afibbers wishing to make sure they enhance the natural blood clearing effect of NK to avoid overly viscous blood which is a factor in creating clotting, should use it on a regular basis because blood viscosity takes time to correct.

As far as the Flight Tabs... the clinical trial was done on the standard natto...I don't know anything about the tree bark you mention. The company that was involved is Adian Products and they sell Flite Tabs using the NSK-SD designation.

Where did you get the info you are quoting? I'll look up the Lancet Publication when I get a minute....but I know in Dr. Holsworth phone call, he mentioned NSK-SD was the one in the trial.

Long answer to your question, but I'd not consider using that NKCP product because of the impurities.

Best regards,

Jackie

This is an important correction and clarification.

In my statement to Jim W. here on the CR, I stated Dr. Holsworth transitioned patients from Coumadin to nattokinase. I mis-spoke. I thought he had mentioned that in a conversation.

So, please erase from your memory any reference to the fact that people on Coumadin can stop and use nattokinase.

Nattokinase, the specific purified enzyme – can be considered an option for people who aren't yet ready to go on Coumadin, aren't at the mandatory age to consider it, or are just unwilling to use that drug. That would be a personal decision and not one dictated by a doctor.

On the use of Aspirin and Nattokinase, Dr. Holsworth replies:

"I would start the nattokinase and then people can use the aspirin as needed for pain relief but I caution against nosebleeds when taken in combination with aspirin. "

On going to the ER when using nattokinase, he says..

I think, mentioning nattokinase would be appropriate but I doubt if it would be taken into any serious consideration by the physicians since CVA/AMI are emergency procedures with standard protocols in treatment. If I were an attending physician, I would not change my approach to a patient with an AMI/CVA even with the knowledge of them using the nattokinase. I think this speaks again in favor of the safety profile of nattokinase and its ability to "first do no harm."

Sorry for the confusion.

Jackie

Jackie: I'm not sure if I'm the only one or not but I'm suffering from data overload on Natto, and particularly NSK-SD. I wonder if you would condense some basic information into a paragraph or two, please:

1. I think that from here on we're only talking about NSK-SD so we should forget all the old regular Natto stuff regarding clotting or lack thereof. We don't think the regular Natto is for afibbers anymore, or do we?
- 2: I understand you to say that NSK-SD contains no Vitamin K of any kind so it has no clotting action.
3. What type, if any, of blood thinning action does NSK-SD have? From Dr. Holsworth's statement above it appears that it may have an aspirin like effect.
4. Does the blood thinning effect show on INR tests? How fast does it work?
5. For those who want to change from coumadin to NSK-SD, how should they titrate considering that many cardiologists don't want anything to do with or know about NSK-SD?
6. It appears there is a significant blood pressure lowering with NSK-SD and the effects should show up within about a week, or so I read. If so, trying to titrate the INR effect and the blood pressure change might be a real challenge. Any chance for some guidelines on ways to do this?
7. Are the dosages weight or age or sex related?

8. Has there been more than 1 clinical study done on humans for NSK-SD?

Inquiring minds want to know.

Thanks for all your hard work and for sharing the results of it.

Gordon

Jackie

Thank you for your enormous contribution on NK.

On NK and aspirin. If one was not bothered by nosebleeds could one take both? Having had a heart attack at 53 I am rather 'scared' about going off aspirin altogether - but would very much like to be on NK.

Would you also mind giving me some advice on "Nattokinase 50 mg by Source Naturals (NSK-SD™) (Providing 2,000 fibrinolytic units (FU) of activity. Would this be a suitable NK to use?

Best regards

Maureen

Maureen,

Question: On NK and aspirin. If one was not bothered by nosebleeds could one take both?

Answer: MQ - I presume the answer would be 'yes' since his answer was the only problem might be nosebleed.

NK does not function at all in the aspirin clotting pathway. But, in some people, aspirin has the tendency to create ruptures of the micro-capillaries...this would include the tiny ones in the nose... which would bring about nose bleeds. This is called capillary fragility. Once NK clears or cleans up the blood of excess fibrin to allow for better micro-circulation in these capillaries, a nose bleed might occur. It isn't from the NK directly, but more the downside of aspirin.

Q. Having had a heart attack at 53 I am rather 'scared' about going off aspirin altogether - but would very much like to be on NK.

A. Heart attack history as a predisposing condition and places you in the group who does have an underlying condition putting you at extra risk...so you should not deviate from your doctor's instructions to take either aspirin or warfarin (Coumadin). You do not have Lone Atrial Fibrillation.

If you decide on your own to also take nattokinase, then that would be your personal decision. Your doctor may or may not approve.

Q. Would you also mind giving me some advice on "Nattokinase 50 mg by Source Naturals (NSK-SD™) (Providing 2,000 fibrinolytic units (FU) of activity. - would this be a suitable NK to use.

A. If you are positive that Source Naturals does contain the NSK-SD purified form, then it would be the safe one to use. For you, the critical issue you need to address with NK is using only a purified form because you want to be sure that supplement does not contain any vitamin K impurities that will promote clot formation.

If one 50 capsule of Source Naturals SNK-SD provides 2,000 FU activity... then you will need to take one of those three times a day with meals for a total of 6,000 FUs daily as recommended by Dr. Holsworth for those with AF.

Be sure you are interpreting the label information correctly.

I did a Google search on Source Naturals and all I could find was 36 mg. capsules....and no designation as to enzyme powder source. Perhaps what you are able to get there is entirely different from what is provided by Source Naturals to the US. The issue wouldn't be the milligram content, but rather if it was truly the purified enzyme form without vitamin K.

The last thing you need, Maureen, is to add vitamin K to your diet through supplement form.

I hope this helps.... **Jackie**

This URL shows the Source Natural product to be 50mg with 2000 fibrin units
<http://store.yahoo.com/iherb/nattokinase1.html>

Gordon

Okay - thanks - missed that one since I only went to the Source Naturals page ...should have gone to iherb in the first place!

However...Maureen

With this product...it takes 2 soft gels to equal the 2000 FU so you will need to take six (6) a day to meet the recommendations Dr. H gives to afibbers.

Since there are only 30 capsules/bottle, this product could be pretty pricey.

I'm glad to see the labeling clearly spells out NSK-SD.

Thanks.
Jackie

Gordon..... sorry but just can't be done in a couple paragraphs and have any significant meaning. It is important to read the latest Update and Summary – Part 1 at least 3 times... after first having read the general information in the Interim Study. This is a complex topic and it becomes even more complex and important as we get into Part 2 – as to how nattokinase prevents atherosclerosis.

So... I'll try to answer your questions as you've listed them.

1. I think that from here on we're only talking about NSK-SD so we should forget all the old regular Natto stuff regarding clotting or lack thereof. We don't think the regular Natto is for afibbers anymore, or do we?

A. The NSK-SD form of nattokinase (the enzyme) is the one Dr. Holsworth recommends because it has been researched and tested. It is the purified form and will not cause clotting complications because it has no vitamin K impurities. This is the critical issue. The "regular" nattokinase... any of the other brands, are less apt to supply the assayed amount of fibrinolytic activity.

The term, natto, is reserved for the food only so unless I indicate "food" I'm always talking about the prepared enzyme form.

2: I understand you to say that NSK-SD contains no Vitamin K of any kind so it has no clotting action.

A. Correct... all the vitamin K has been removed and there is no danger of clot promotion.

3. What type, if any, of blood thinning action does NSK-SD have? From Dr. Holsworth's statement above it appears that it may have an aspirin like effect.

A. Review the Update and Summary to understand the properties/functions of nattokinase. Aspirin is anti-platelet. Nattokinase is not anti-platelet.

4. Does the blood thinning effect show on INR tests? How fast does it work?

A. Again...this was covered in the Interim survey. The effect of NK does not show up in INR evaluations because INR tests for a specific marker and has to do with vitamin K activity.

When you say how fast, it's not like the aspirin effect on a headache. NK gets in the blood and is active within 4 hours after taking and lasts for 8 hours or longer. You need continual dosing. This was covered in both the Survey and Summary.

For NK to function as intended, (breaking down fibrinogen and enhancing the body's own fibrinolytic systems), it takes regular doses daily of the recommended amounts. Evidence of this effect is noted in an end result in many patients who have hypertension...after a week of blood clearing of fibrinogen which reduces the viscosity of the blood (thickness), blood pressures are observed to decrease... because there is less arterial pressure from high blood viscosity. Of course, this assumes correct FU activity dosing and the pure, isolated NSK-SD form is used.

5. For those who want to change from coumadin to NSK-SD, how should they titrate considering that many cardiologists don't want anything to do with or know about NSK-SD?

A. As I previously posted separately in my "Alert" clarifications... People who have to be on Coumadin as prescribed by their doctor cannot transition off, but they can use it along with Coumadin as long as they use a guaranteed purified enzyme... the NSK-SD.

Be aware, most doctors will not know how to respond to this and will frown upon it because they don't know.

My initial Interim post was a survey of the properties and functions of NK as a safe alternative to the use of Coumadin and aspirin, for afibbers or anyone who is not required by their physician to go on Coumadin. If the requirement is merely a medical/legal responsibility or meeting the standard of care requirement, then the patient can and certainly does have an option to choose for him/herself.

These patients, however, cannot have any underlying risk factors such as heart disease, previous heart attack, stroke, artificial valves, etc. If they are required to take warfarin/Coumadin...then, they will have to do just that.

6. It appears there is a significant blood pressure lowering with NSK-SD and the effects should show up within about a week, or so I read. If so, trying to titrate the INR effect and the blood pressure change might be a real challenge. Any chance for some guidelines on ways to do this?

A. Lowering of Bp in many cases is true as observed by Dr. Holsworth. However, as stated previously, the use of NK is not reflected in INR testing. The only thing that would be needed is for a person to monitor blood pressure at home on a consistent basis... always at the same time, etc. as directed by their physician. If a significant drop is noted, then they would need to reduce the Bp medication and their doctor can help them do just that. In many cases, Bp medication can be eliminated once stability is reached and this comes about because of better circulation and lower blood viscosity.

Blood tests would not be involved.

7. Are the dosages weight or age or sex related?

A. I've not seen any distinctions as to weight or gender.

8. Has there been more than 1 clinical study done on humans for NSK-SD?

A. Apparently, yes... but finding or obtaining them is obscure and I'm not sure why unless it has to do with trade secrets. The one site I mentioned in the Interim Survey. www.jafra.com has a good deal of information.

I'm also puzzled as to why there is so little published and my only conclusion is financial considerations since these studies are all privately financed. Nothing is funded by institutions or Big Pharma since patents aren't granted on natural products. I assume the Japan BioScience patent on NSK-SD is for the purification process, itself, and not the product. When people are funding out of pocket, less seems to be circulated. Maybe eventually.

I hope this helps. All I can recommend is to repeat reading until it becomes clear. Part 2 will tie it all together. There may be refinements to this later on. I'll post if I learn anything new.

Incidentally, one BB poster, Mira, is on Coumadin and is also taking Nattokinase. Her doctor tells her it is okay as long as it is a supplement and not the food, natto.

The most important instructions are:

- 1) Understand the contraindications.
- 2) Do not take if you have bleeding conditions.
- 3) Do not stop Coumadin and switch to nattokinase.
- 4) Choose the pure, isolated enzyme – NSK-SD.
- 5) Take 6000 FUs a day with meals if you have active, regular AF, and never skip the nightly dose which is the most critical.
- 6) Consider 4000 FU a preventive or protective dose without AF or very infrequent AF
- 7) Be tested for CRP, Fibrinogen, Ferritin, Lp(a), Homocysteine - all markers for atherosclerosis.
- 8) Spend the time to learn and understand this whole process so you can make a decision to use nattokinase, or aspirin, or warfarin and know how and why you are or are not protected from Thrombosis. After Part 2, you'll want to learn about atherosclerosis as well.

Only you are responsible for your health status.

Knowledge is power.

Jackie

Jackie - Thanks for the info. I really appreciate all your research and effort into Nattokinase and much more!

The Allergy Research brand available from iherb as mentioned by Hans.... is sold under the name Nutricology...and it is the NSK-SD product. Jackie, it doesn't say about NSK-SD? Maybe I'm missing something?

I just purchased and received Nattokinase (NSK SD), Source naturals of 50mg of 30 softgels. I probably just take 2 softgels once per day since its pretty expensive and I'm on coumadin.

However, I was on Nattokinase, Naturally, 750 FU, 37.5mg 120 enteric coated tabs, I was taking 2tabs and sometime 4 taps while I was on coumadin and it has been monitoring. Here are my INR test results of combining Nattokinase and Coumadin:

Date	Dosage of coumadin	Dosage of Nattokinase
3/24/05	2.5mg	2 taps of am/pm
3/25/05	5 mg	2 tabs
3/26/05	2.5 mg	2 tabs
3/27/05	5mg	2 tabs
3/29/05	5mg	2 tabs

3/30/05 5mg 2 tabs
3/31/05 2.5mg 2 tabs
3/31/05 my INR was 1.5. The average is 3.93 mg of Coumadin in days (27.5/7).

4/1/05 5mg 2 tabs
4/2/05 5mg 2 tabs
4/3/05 5mg 2 tabs
4/4/05 5mg None
4/5/05 5mg None
4/6/05 5mg None
4/7/05 5mg 2 tabs
4/7/05 my INR was 1.9. The average is 5 mg of Coumadin in 7 days (35/7).

4/8/05 5mg 2 tabs am/pm
4/9/05 5mg
4/10/05 5mg
4/11/05 5mg
4/12/05 5mg
4/13/05 5mg 2 tabs am
4/14/05 5mg
4/14/05 my INR was 1.6. The average is 5 mg of Coumadin in 7 days (35/7).

4/15/05 10mg None
4/15/05 7.5mg None
4/17/05 5mg None
4/18/05 7.5mg 2 tabs
4/19/05 5mg 3 vitalzym. I had left over and decided to use it up.
4/20/05 5mg 1 tab only
4/21/05 5mg None
4/21/05 my INR was 1.8. The average is 6.42 mg of Coumadin in days (45/7).

4/22/05 7.5mg None
4/23/05 7.5mg None
4/24/05 7.5mg None
4/25/05 5mg None
4/26/05 7.5mg None
4/27/05 7.5mg None
4/28/05 5mg None
4/28/05 my INR was 2.6 the average is 6.79 mg of Coumadin (47.5/7).

Right now I'm on 7.5mg 2 days and 5mg one day, then Repeat the cycle until 2wks then take another INR test on 5/11/05

As you can tell, it seems like natto was lowering my INR level. When I stopped taking them for wk, my INR level went up. I'm not sure this is just coincident or it was Natto that I was taking (Nattokinase, Naturally, 750 FU, 37.5 mg, 120 enteric coated tabs) had vitamins K in it? I though it wasn't so if you're on coumadin and Natto, be sure to monitor your INR level.

Mira

Boy, I am sooo glad to have found some forum where they actually speak intelligently about Nattokinase and where people seem to be genuinely curious about it! Thank you so much!

I do not have AF, but I have a clotting disorder (clot more than 'regular' people, and was put on Coumadin for life; after

2 1/2 years, doctors told me I could get off it. I chose to do research and found out about Nattokinase, and eventually got in contact with Dr. Holsworth.

On a different thread here, I have already given the info below, and wanted to post it here, too:

I am in the U.S., and I am selling N-Kinase for \$US27/bottle (the brand from Dr. Holsworth). I do have a couple of customers in Australia, and am able to send them 6 bottles at a time, for a cost of US\$ 9 postage, and with 6xUS\$27=US\$151 total cost. The Nattokinase is the NSK-SD type, 50 mg/capsule (1000FU/capsule), 90 capsules/bottle. Just thought you might be interested. ;)

Karen

Jackie, I agree with you on your assessment of those quotes. I also saw those quotes in that forum, and I believe Dr. Moll answered when he did not yet have all the information that is available. (I had brought up the N. subject in that forum, and since Dr. Moll is a 'regular' doctor, he is not too fast on endorsing 'alternatives'.) Just wanted to again express my thanks that you have this forum set up here. ;)

Karen

Beware of 'fakes!' There are quite a few brands out there that are fakes, i.e. don't have any real Nattokinase in it! Your brand might have the 'impure' one; when I was on Coumadin and started with Nattokinase NSK-SD, my INR for the first time in over 2 years finally stabilized!

If people want to get off of Coumadin, or lower their INR to just around 1.8, they definitely should make sure they have a reputable brand name, and also go slowly down with your INR. Do not go 'cold turkey' style, because your body might react like with an illegal drug withdrawal, and go into clotting-overdrive! (I actually believe that is what is happening, and that the drug companies know it, but they don't warn people, because... once you have a second clot, conventional medical wisdom says you will be a 'lifer' on Coumadin. (Look at all the \$\$ they can make from the drugs and the doctor visits and lab tests to be performed over so many millions of lifetimes...))

Karen

Mira - It could be that the Naturally product is not as "pure" as stated. If it is not, and does have some vitamin K impurities left, this could have been holding down your INR levels. However, many people whose diet is high in veggies and leafy greens, find they have to consistently use higher doses of Coumadin to reach and maintain the required minimum of 2.0. You may have to go up with the Coumadin before your ablation.

Also a possibility was that the enteric coating was too good and didn't dissolve enough to allow the activity. Dr. Holsworth said he found many of the coatings didn't break down enough or at all so the patient lost the benefit.

On the Allergy Research - they market under the Nutricology and on their web page...they do indicate NSK-SD.

Hope this helps.

Jackie

Karen ~ I appreciate your enthusiasm for nattokinase and for finding this informative web site.

However, please understand that you or I or any other lay person cannot tell patients to "get off" Coumadin and just use nattokinase.

If this is to be done in certain cases, it should be done under a physician's supervision.

Now, that said, if a patient wants to make that transition on their own and decides to make an educated and informed decision after reading about the long-term side effects of Coumadin, then they do so at their own risk.

Here's a quote from Garry Gordon, MD, speaking to a group of doctors, about what they can and can't do to avoid the medical/legal pitfalls.

....." I tell doctors to look at my website and look for informed consent and answer every question that patients have but...DO NOT ADVISE THEM TO STOP COUMADIN. IT HAS TO BE THE PATIENT'S OWN CHOICE... as we do not have the \$700 million it takes to make things "legal" under the so-called double-blind placebo standard that has been arbitrarily shoved down the throats of Americans. This standard is obviously nonsense as we continue to find these approved drugs are at least the third most common cause of death and the FDA keeps pulling drugs off the market. "

Jackie

Jackie - Thanks for your comments. I have been eating greens all the time and that area hasn't changed at all. As you mentioned that it could be vitamins K impurities left. So to be safe for my second ablation, I will just not take natto and resume it after the ablation.

Thanks Jackie!

Mira

Oh, Jackie, I 100,000% agree with you! I did not want to seem to advocate that anyone get off of Coumadin- I was able to do it with the express consent of my doctors!

Karen

Part 2 – Nattokinase Update & Summary

Introduction – Revisited

THE ROLE OF BLOOD VISCOSITY AND INFLAMMATION IN ATHEROSCLEROSIS & THROMBOSIS

More of the story – The New Emerging Paradigm Shift

The use of this remarkable enzyme fits hand in glove with the emerging new paradigm shift that connects increased blood viscosity and inflammation to atherosclerotic plaque as the source for thrombosis, stroke and heart attacks. This is a shift from the current holding that cholesterol is responsible for cardiovascular disease and mortality. Statistics show that half of the people who have heart attacks also have low cholesterol (according to the American Heart Association.) There's obviously more to the story.

A crash course on the causative factors comes from Dr. Holsworth's presentations. He's a master of clarification through analogy which enables everyone, from physician peers to patient, to envision and grasp immediately how these thrombi or clots form and why.

He says in healthy blood vessels, the inner-most lining called the endothelial lining, is smooth and slippery, as if it has a Teflon coating. Blood flows smoothly in healthy vessels. But when the blood gets thick and viscous, it has the capacity to irritate and damage this smooth lining.

He asks that we envision a mighty river during flood stages... the water is thick with mud, debris and rocks and in the high-water stages, it erodes the banks, doing damage along the way. The same is true of the lining of blood vessels;

blood thick with debris will scrape and tear the smooth lining. This then calls for reparative measures...first inflammation and then protective compounds to shore up the weakness...calcium, cholesterol, fibrin, all go into building up a damaged and weak area. He said the body will do anything to prevent the bursting or rupturing of a damaged blood vessel.

These areas of endothelial damage tend to be where there is more turbulent flow such as the coronary arteries, the aorta where it enters the heart... areas called counter currents or eddies form at flow divides.

Thick blood with turbulent flow initiates a clot. Consider... blood is a protein; milk is a protein. Churn milk and you get butter; churn blood, and you make a clot.

So, it is time to address the study of hemorheology – the physical properties of blood flow and how it affects health. This is hugely important not only for fibbers because we are concerned with blood flow and clotting, but also because unhealthy blood viscosity has far reaching effects on our overall health.

In his opening statements to the OrthoMolecular Medicine Congress in February this year, Ralph Holsworth, Jr. DO, pointed out these facts:

There are key issues in the role of NK, Fibrin, and inflammatory processes in disease.

- 1) Low shear velocity
- 2) Acute infection or inflammatory process
- 3) Body needs immune homeostasis
- 4) The smoothness of the endothelial lining is critical
- 5) Plasmin levels are elevated in transient thrombolytic states
- 6) Protease and anti-protease is a balance but in a proinflammatory process, we are weighted toward creating clots... post surgery, below the waist, predisposition to Deep Vein Thrombosis.
- 7) Genetically encoded defects in coagulation pathways.

There is a serious incidence of venous thrombi – 3.4 million occurrences – over 2 million annually die from arterial or venous thrombi. There is a four-fold increase in people having inadvertent clots.

Interest was shown in both Time and Newsweek with articles addressing issues of sterile inflammation and infiltrates, and prothrombic or thrombophylic states... as in surgery, trauma, pregnancy, prolonged immobilization, malignancies and infections.

There are over 300 independent cardiac risk factors for heart attack and stroke and stroke and the common denominator is the endothelial lining. Blood viscosity is a multi-factorial situation.

What is Hemorheology?

Rheology is the study of the dynamics of blood flow and its impact on vascular-related diseases.

In 1997, Kenneth Kensey's (MD) research studying red blood cells recognized the fact that one in four people have a predisposition to making clots and cross-linked fibrin.

From this study, a company called Rheologics was founded in 1997 by Dr. Kensey, a cardiologist and leading expert in cardiovascular product development, and Young I. Cho, Ph.D., an internationally recognized expert in fluid mechanics at Drexel University. More than 15 years ago, Drs. Kensey and Cho began research on the relationship between blood viscosity and the development of cardiovascular disease, The two researchers predicted that a simple, accurate and clinically practical device for measuring the Whole Blood Viscosity within its natural, biological environment could provide data that would pave the way for major advances in cardiovascular research. That prediction led to the development of new technology that makes it possible for researchers and clinicians to fully evaluate the biophysical properties of blood.

(See Reference info for details.)

Hemorheology research indicates:

Females naturally have a lower crit and, therefore, lower blood volume so red blood cells (RBCs) are not abrasive to endothelial lining. This protective, estrogenic benefit is lost with menopause – natural or surgically induced.

A man whose crit is 50 and lowers to 45 (or 10%) decreases blood thickness by 25%

You can increase blood flow by blood donation and proper hydration.

Patients on warfarin/Coumadin, should also donate blood and just need a note from the physician directing the lab or the Red Cross to draw and discard the blood. Usually, there is just a nominal fee around \$10 for this service and the benefits are huge.

Blood viscosity is 4 times thicker in diastole than systole... this has tremendous implications for increasing atrial size.

Lipoprotein(a) levels have the exact hemology as LDL measurements. People with elevated Lp(a) and LDL have a predisposition of impaired fibrinolysis. If CRP is elevated, fibrinogen will be elevated.

Visceral obesity impairs fibrinolysis and is a nesting grounds for atherosclerosis. Important to test for Lp(a). Frequently seen in Metabolic Syndrome X and Insulin Resistance.

Diabetics have elevated blood viscosity since their blood is highly oxidized and they have dysfunctional fibrinolytic systems... hence, the higher risk of thrombosis.

March 2003 Nutrition study indicated injury and endothelial thickening – NK was used to prevent endothelial damage.

In a clinical study by Dr. Holsworth, starting with 20 patients and expanded to 60, for an 8 week trial blood pressure analysis, NK was seen positively affecting RBC aggregation and sedimentation... NK improved the ability of RBCs to deform which is important to microvascular disease – as seen in Type 2 diabetes. There is a bottlenecking of RBC when they are not able to deform and get into the small capillary beds due to plasmin proteins and viscosities. There will be elevated Lp(a) and impaired fibrinolysis. NK is good therapeutic agent; also nicotinic acid. (He described the deforming as changing shape (flexibility) to slide through the tiny capillaries.)

Inflammation, Infection, Hypercoagulation

(Holsworth) The chain of events is: Pathogens/ irritation/ infection/ inflammation excess fibrin deposition... laying down of fibrin in blood vessels where pathogens hide to wall off and protect the body results in hypercoagulation. Acute and chronic infections lead to inflammation which decreases microperfusion and increases peripheral resistance as in hypertension, congestive heart failure... all exacerbated.

(Berg) Activators of inflammation (whatever the source) results in coagulation activation. These can be viruses, bacteria, Lyme, Candida, vaccines, heavy metals, amalgams, toxins, chemicals, parasites, trauma, etc. All these will activate the immune system.

The problem compounds if the individual is also one in 30% of the population that has a genetically encoded defect in coagulation pathways. (Covered in a separate section.)

(Holsworth) Regarding infection, findings now show a variety of nanobacteria – pathogens found in atherosclerotic plaque such as in Chlamydia pneumoniae which trigger or are an antecedent to atherosclerotic plaque along with another contributing factor which is viscosity.

Thus, the new paradigm shift in what causes clotting – viscosity of the blood. In the new book, "Origins of Atherosclerosis" by Kenneth Kensey, MD...soon to be published... this Protective Adaptation Theory is discussed and takes in the consideration of the physical properties of the blood and how it relates to inflammation.

What is blood viscosity and why is it important?

(Rheologics) Viscosity is a biophysical property of blood that relates to the thickness and stickiness of blood, which determines its flow rate within the human body. The interaction between the flowing blood and the protective mechanisms of the arteries are becoming increasingly understood, and blood viscosity is playing a major role in determining these forces.

There is growing scientific evidence that supports the theory that blood viscosity levels can be used to identify patients at risk for atherosclerosis - the cause for heart disease and stroke. An accurate and comprehensive blood viscosity test - one that is performed at the patient point of care and that delivers results in just a few minutes - would give healthcare providers a valuable tool for diagnosing and preventing cardiac disease.

(Holsworth) Viscosity is the thickness of fluid. Blood is a non-newtonian fluid and shears in a 1:1 relationship. If you put energy into it, there is shear thinning. Low shear conditions exist in calves of legs. The blood gets out there but if it is too thick and with no activity, it settles.... Energy in the calves, thins.

Consider catsup compared to thick blood... similar in flow ability.

Viscosity creates greater drag or abrasive effect on the inside of the blood vessel.

Analogy – remember the river in flood stages will erode the banks. There is more sediment an erosion and change. Same in the body--turbulent flow. The protective adaptation theory is that if you slowly rub a spot on your hand, eventually, you'll get a callous. If you rub fast, you'll get a blister.

The endothelial lining of the blood vessel gets exposed to thicker fluid than was designed to carry. So what happens? The endothelial lining loses compliance – it's like a water hammer or pounding the lining and it's most significant where greatest pressure changes occur...right at the heart... aortic pressures cause aortic stenosis. The body frantically tries to repair or prevent damage or a burst of that pipe and uses calcium and builds arteriosclerosis which becomes atherosclerosis.

The single causative agent (for whatever reason) blood is thicker than it should be...dietary, infection, genetics, but it denudes or erodes the Teflon coating of the endothelial lining of the blood vessel.

The heart trying to pump something heavier than for what it was designed...increases blood pressure – we get essential hypertension – unexplained cause – but the hypothesis is basically the peripheral resistance is increasing which makes the pressure go up. Chronically, then the heart enlarges in congestive heart failure. It wears out...tired of pushing the rock up the hill.

In new cars today with close mechanical tolerances, they lowered the viscosity of oils – same thing in the body – if blood is too thick it won't get into the microperfusions – the subcellular where the exchange of metabolic waste and nutrients occurs. It's really all here in the fine capillary beds and the microperfusion of those cells. Fingernails grow when on NK because it restores microperfusion in extremities.

Rheology is underutilized in science.

There is low shear and high shear. In high, everything moves smoothly – good condition. But if sticky platelet formation occurs, there is low flow... Infection will raise CRP and cholesterol and there will be low shear which increases viscosity.

This is very important...non-functional fibrin – crosslinked fibrin – secondary to chronic inflammatory states contributes to high viscosity of blood.

Diabetics have very thick blood and it is in an oxidized state.

Biochemistry of thick blood: denudes cells – lose endothelial lining.

In stent placement – said to re-stenose in 5 years. You are forcing open and ramming in wire mesh which is an insult or injury to the lining which already has stenosis – and irritates the cells even further.

Genetics, Clotting Mechanism Dysfunction & Chronic Degenerative Diseases

David Berg, founder of Hemex Laboratories in Phoenix, AZ, says a certain small number of our population are very easy "bleeders" as a result of genetic diseases such as Hemophilia. There are the vast majority of people who "clot" their blood normally and, on the other side of the bell shaped curve, a small number of people who are hypercoagulable or "slow bleeders." He estimates as many as 14 million Americans have problems with Hypercoagulation. He says about 30% of the population have a genetically encoded defect for hypercoagulation.

A hereditary defect in a coagulation regulatory protein, such as protein C, protein S, Leiden Factor V(5), prothrombin gene mutation, PAI-1, Lp(a), or elevated homocysteine is predispositional in greater than 75% of patients.

Because this hypercoagulability does not result in an immediate thrombosis (100% occlusion), but rather in fibrin deposition (50-95%), we suggest that an appropriate name for this antiphospholipid antibody process to be: Immune System Activation of Coagulation (ISAC) syndrome. (See explanation at www.Hemex.com)

In addition to thrombosis, hypercoagulation also manifests in all forms of chronic degenerative diseases such as atherosclerosis, chronic fatigue/fibromyalgia, arthritis, cirrhosis, emphysema, chronic fatigue and the 100 or so chronic degenerative diseases that make up the practices of holistic practitioners....such as Infertility (Recurrent Fetal Loss), TIA, Osteonecrosis of the jaw, Crohn's disease, Irritable Bowel Disease, Multiple Sclerosis, Sjogrens Syndrome and Lyme Disease.

People are not chronically ill unless there is a coagulation regulatory protein defect as seen in Thrombophilia or Hypofibrinolysis.

Hemex specializes in the highly sophisticated evaluations of dysfunctions of the clotting mechanisms which prove whether or not a patient is hypercoagulable and then to see whether it is due to genetics or environmental toxicity or both.

Hormones and blood viscosity

Women have the benefit of estrogen until menopause and naturally thinner blood. After menopause, the risk increases. (Holsworth) It makes sense to use bioidentical hormones to prevent cardiovascular disease in post menopausal women. (Wright)

(Wright) Men who are low in testosterone have thicker blood and a higher risk of heart disease. There is a direct correlation between increased incidence of cardiovascular disease and low levels of testosterone.

With less testosterone, there is more angina and more atherosclerosis. There will be abnormal coagulation if testosterone is low. The more testosterone, the less PAI-1 (Pie one) which is good.

If men are given natural testosterone, the inhibitor levels will be lowered.tPA will also be low and can be increased if endogenous testosterone is raised. We can favorably influence the ability of blood to clot by raising levels of testosterone and knocking down inhibitors and raising activators of substances that keep blood from clotting – PAI-1 and tPA. (Wright)

Hormone levels need to be checked and replacement hormones need to be bio-identical and not synthetic. The synthetic hormones both male and female have a history of detrimental effects.

What does all this mean to Afibbers?

Since we are concerned with risk of thrombosis, and eventually, we become pressured into warfarin/Coumadin consideration, we need to be aware that there may be an existing defect in clotting the clotting mechanism that needs to be determined before we can decide on our own if taking warfarin/Coumadin is good prevention, or if we can

improve the blood viscosity, lower the risk of atherosclerosis and subsequent clotting with the use of purified, isolate nattokinase to up-regulate our natural anti-thrombosis enzymes.

Since high blood viscosity is the reason atherosclerosis forms...and atherosclerosis can rupture and release clots at any time, it makes sense to address the viscosity issues through lowering plasma fibrinogen with nattokinase, donating blood regularly, hydrating adequately and supplementing with other natural nutrients known properties of anti-inflammatory and anti-platelet aggregation or stickiness.

Inflammation is the primary initiator of atherosclerotic plaque leading to thrombosis. WE need to be tested for levels of the markers of inflammation, CRP, Lp(a), Fibrinogen, Homocysteine and if elevations don't resolve, we need to look into genetic clotting defects for protection.

Nattokinase will lower fibrinogen and up-regulate the natural endogenous anticlotting mechanisms.

Indirectly, NK lowers inflammation of the endothelial lining because less viscous blood (thinner blood) will not denude or irritate so the inflammatory response is not induced.

I urge you to visit the sites listed in References to learn more.

Jackie

References:

Treatment of Blood Viscosity with Fibrinolytic Enzymes, Ralph Holsworth, Jr., DO, presentation at the OrthoMolecular Heart Health Symposium, San Francisco, CA, February 2005

Nattokinase and Cardiovascular Health, Ralph Holsworth, Jr. DO, presentation at 7th International Congress of BioEnergetic Medicine, Orlando, FL April, 2003.

Bioidentical Testosterone & Estrogens in Vascular Health – Jonathan Wright, MD
OrthoMolecular Heart Health Symposium, San Francisco, CA February 2005

Coagulation Factors Control Blood Flow and Heart Health, David Berg, MS.
OrthoMolecular Heart Health Symposium, San Francisco, CA, February 2005

Hemex Laboratory www.hemex.com

David E. Berg , MS, CLS(NCA)

Director, HEMEX Laboratories, Inc.

Phoenix, AZ with Lois Hill Berg, they established and developed several laboratories. HEMEX was opened in July, 1983 and performs special coagulation testing for Phoenix, Tucson, Flagstaff and other Arizona hospitals and medical facilities. HEMEX expanded services in 1986, offering reference coagulation testing nationwide with laboratories in Phoenix, and New Orleans. In 1997, HEMEX added a flow cytometry laboratory in order to expand testing into Leukemia, Lymphoma, and Platelet studies. Since 1994, David has been closely involved in clinical research involving Infertility and Chronic Illness, and has set forth new ideas about low level coagulation activation, fibrin deposition, chronic illnesses and potential therapies.

EDUCATION

- BA: Phillips University, Enid OK, Bachelor of Arts, 1966.
- MS: University of Nebraska, Omaha NE, Master of Science in Clinical Pathology, 1970
- MT: Medical Technology: Menorah Medical Center, Kansas City MO July 1961 - June 1962
- ASCP: Registry, November, 1962
- California Registry, March, 1976
- CLS(NCA) Clinical Laboratory Scientist, National Certification Agency, 1981

INVITED LECTURES AND PRESENTATIONS

Over 78 since 1984.

PUBLICATIONS

19 original journal articles, 6 abstracts and 2 book chapters.

WORK EXPERIENCE

Director, HEMEX Laboratories, 19 years. Lab Manager, National Health Labs, 4 years.

Tech Rep, Product Mgr, Sales Rep, Hyland Diagnostics, 7 years. Other Management Positions.

Rheologics - www.rheologics.com

Today, Dr. Kensey leads Rheologics. Headquartered in Exton, PA. The Rheologics staff has spent more than 12 years collaborating on the study of the biophysical properties of blood. The company holds 28 device and technology patents and has 23 patents pending. To date, Dr. Kensey has invested more than \$13 million into the project. The company is currently evaluating additional funding alternatives, to be used for clinical trials, device commercialization, drug discovery and development, and engineering research and development.

Dr. Kensey says, "When the hotel clerk at a Society of Rheology meeting asks me what rheology is, I have a ready answer I could use: 'Rheology is the study of deformation and flow.' This is true, but not an answer that would usually trigger a light-bulb moment for the friendly staff member. Instead, I say, 'Rheology is the study of the flow of materials that behave in an interesting or unusual manner. Oil and water flow in familiar, normal ways, whereas mayonnaise, peanut butter, chocolate, bread dough, and Silly Putty flow in complex and unusual ways. In rheology, we study the flows of unusual materials.'"

This information is mentioned because it is through Dr. Kensey's work, that the connection between inflammation as a result of high blood viscosity is made clear. Dr. Kensey is author of the book, He is the author of "The Blood Thinner Cure: a Revolutionary Seven Step Lifestyle Plan for Stopping Heart Disease and Stroke" and another soon to be published that promised to be a must-read - The Origins of Atherosclerosis

Dr. Jonathan V. Wright, M.D.

Dr. Jonathan Wright is the Medical Director of Tahoma Clinic where he has his full-time family practice. Upon achieving his Bachelor of Arts degree from Harvard University and medical degree from University of Michigan, he successfully completed his residency at Group Health Hospital in Seattle, Washington. Within Dr. Wright's family practice, preventive medicine, nutritional medicine, biochemistry, as well as allergy research are emphasized. Dr. Wright is a leader in the field of complimentary medicine as he combines allopathic medicine with an extensive naturopathic medical program. He applies his medical expertise in diagnosing and treating acute and chronic diseases. Under the guidance of Dr. Wright, Tahoma Clinic is staffed with medical doctors, naturopathic physicians, a traditional Chinese doctor (acupuncture), as well as nutritionists and allergists.

Awarded an honorary doctorate degree in Naturopathic Medicine from Bastyr University, Dr. Wright currently strives to establish a hospital that is medically staffed by both allopathic and naturopathic physicians. This project is an attempt to promote the advancement of medicine and to better serve the patient community. Dr. Wright's commitment to the medical research and to serve as a patient advocate led him to be the President of the National Health Federation. NHF was founded in 1955 to promote freedom of choice in health care and to maintain the First Amendment rights of Americans to freely disseminate health-care information. It is upon this premise that Dr. Wright practices medicine, utilizing vast resources of medical information with respect to research, empirical evidence, and patient concern.

Dr. Wright is internationally known for his medical publications, two texts achieving best selling status; "Book of Nutritional Therapy" and "Guide to Healing with Nutrition". His most recent books are "Natural Hormone Replacement for Women over 45", "Maximize Your Vitality and Potency for Men over 40", "The Natural Pharmacy", and "The Patient's Book of Natural Healing." As a columnist, Dr. Wright authors Nutrition and Healing, a monthly newsletter that emphasizes nutritional medicine in medical practice.

Additionally, he wrote regular articles for Prevention magazine from 1976 to 1986 and Let's Live magazine from 1986 to 1996. Dr. Wright continues to publish articles among other publications. Currently, he lectures nationwide on various topics. These include, among many others; nutritional medicine, natural hormone replacement for men and women, the natural treatment of cardiovascular diseases, adrenal diseases, childhood asthma, and with it's revival in 1999, the use

of histamine therapy in Multiple Sclerosis.

Jonathan V. Wright, MD is a board member of various organizations, such as the American Preventive Medical Association (APMA) and International College of Advanced Longevity Medicine (ICALM), and participates in multiple health care associations, including the Association of American Physicians and Surgeons, American Academy for Advancement in Medicine, and others.

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www.thrombocare.com

<http://www.allergyresearchgroup.com/articles.htm>

Human Study

The same natto extract was then tested on human volunteers with high blood pressure. Blood pressure levels were measured after 30 grams of lyophilized extract (equivalent to 200 grams of natto food) was administered orally for 4 consecutive days. In 4 out of 5 volunteers, the systolic blood pressure (SBP) decreased on average from 173.8 + 20.5 mmHg to 154.8 + 12.6 mmHg. Diastolic blood pressure (DBP) decreased on average from 101.0 + 11.4 mmHg to 91.2 + 6.6 mmHg. On average, this data represents a 10.9 percent drop in SBP and a 9.7 percent drop in DBP.^{1,2,6}

1. Prevent Heart Attack and Stroke with Potent Enzyme that Dissolves Deadly Blood Clots in Hours. Health Sciences Institute, March 2002.
2. Maruyama M, Sumi H. Effect of Natto Diet on Blood Pressure. JTTAS, 1995.
6. Sumi H. Healthy Microbe "Bacillus natto". Japan Bio Science Laboratory Co. Ltd.

Related resources:

<http://www.jafra.gr.jp/natto-e.html>

1. A novel fibrinolytic enzyme(nattokinase)in the vegetable cheese Natto; a typical and popular soybean food in the Japanese diet
2. Enhancement of the Fibrinolytic Activity in Plasma by Oral Administration of Nattokinase¹| Japanese |
3. Accumulation of Vitamin K (menaquinone-7) in Plasma after Ingestion of Natto and Natto Bacilli (B. subtilis natto)| Japanese |
4. A NOVEL STRONG FIBRINOLYTIC ENZYME (NATTOKINASE) IN THE VEGETABLE CHEESE "NATTO" | Japanese |
5. FIBRINOLYTIC EFFECT OF THE JAPANESE TRADITIONAL FOOD "NATTO" (NATTOKINASE) | Japanese |
6. EFFECT OF NATTO DIET ON BLOOD PRESSURE| Japanese |
7. Effect of NKCP, a powder produced from dried culture filtrate of partially distilled Bacillus subtilis, on fluidity of blood| Japanese |

Jackie,

Really fascinating. Thank you so much for your efforts.

How, then (assuming it does) does NK deal with the problem of pre-existing plaque? That is, while NK regulates blood viscosity, does its proteolytic properties address existing plaque as has been "advertised"? And in a similar vein (no pun intended), previous literature and research have seemed to me to make clear claims for NK as a "clot-buster". If I'm reading your several posts correctly, you seem to be saying that researchers such as Dr. Holsworth, by emphasizing blood viscosity, are backing away from the claim that NK can "dissolve" thrombi. And finally, if the blood-thinning properties of NK are dose-dependent (and given an apparent wide range of individual variability in blood viscosity, genetic or otherwise), wouldn't there be a point (given enough NK) at which the blood would be "too thin", (and would NKs influence on blood be readily measurable)?

I apologize if these questions reflect either an admittedly dismal ignorance of hematology, physiology, etc. and/or a sloppy reading of your fantastic research.

Trent

Hello, Jackie. Can you talk a little more about the ideas in this paragraph:

"He asks that we envision a mighty river during flood stages... the water is thick with mud, debris and rocks and in the high-water stages, it erodes the banks, doing damage along the way. The same is true of the lining of blood vessels; blood thick with debris will scrape and tear the smooth lining. This then calls for reparative measures...first inflammation and then protective compounds to shore up the weakness...calcium, cholesterol, fibrin, all go into building up a damaged and weak area. He said the body will do anything to prevent the bursting or rupturing of a damaged blood vessel."

Jackie, is it the turbulence of the flow doing the damage, or the 'mud, debris, and rocks'? Is there actually any equivalent of this debris material in the bloodstream? If so, where is it coming from and what does it consist of?

PeggyM

Trent - Very good questions. Fibrin is the web-like matrix that holds together the atherosclerotic plaque... and from the collection of articles I've read, it is my understanding that the fibrin is gradually lysed or broken down over time. Once the blood viscosity is lower in that it doesn't contain the volume of fibrinogen, it will not be scraping at the vessel walls with the previous velocity and therefore will not be creating the irritation and subsequent additional build up.

I don't envision NK as 'draino'.... take it for a week and the vessels are slick and clean...but rather a gentle and slow disintegration of atherosclerotic build up.

Garry Gordon, MD who is the leader in oral chelation and has developed his own system likes to think that with the addition of NK, the build up and potential clots will be slowly 'eaten' away.

Both of them seem to say that with the use of NK thrombi just don't or can't form. I presume this means after taking it long enough to upregulate the endogenous fibrinolytic systems. Once those are functioning, it makes sense that clots are unable to form.

He also says and I believe I quoted...that the body has the wisdom not to thin or remove any more fibrin than is necessary...it will reach homeostasis naturally. We don't have to worry about overdosing. He does recommend, though that we take 6,000 FU if we are in active AF and more at risk for thrombi, than if we are preventive...at 4,000 FU. This would indicate to me he wants to be sure there is no deficiency in any of these anti-clotting systems so they function optimally.

Does this help?

Jackie

Peggy - I'm out of time. I'll be back, but short answer is yes...the blood is loaded with cells which are essential and debris which is not. You might enjoy researching some of the components of blood on Google.

Nutrients come in and are circulated through the blood, toxins and waste products are also picked up and carried in the blood for excretion. Additionally, we get chemicals, toxins, heavy metals, pesticides, bacteria, viruses, candida. The blood isn't a clear red liquid, microscopically.

The extra fibrinogen floating in the blood is the prime culprit for the viscosity.

I guess one has to understand a bit of physiology to grasp the analogy which Dr. Holsworth did so well.

To answer your question...it is both the pressure from the viscosity, the turbulence in the flow divides and the debris... just as he describes the river.

Got to run.

Jackie

Peggy,

The contents of the blood are why Dr D'Adamo promotes eating for one's blood type. The aim is to keep out of the blood stream items of food breakdown which react with our specific type and cause agglutination.

example in Dr D's column today [supplement rather than food item]:

<http://www.dadamo.com/ask/ask2.pl>

The Ask Dr. D'Adamo Question For 8 May 2005

TYPE O AND ARTHRITIS

snip:

One simple explanation is that chondroitin sulphate is actually comprised of long linked chains of the sugar acetylated galactosamine. You might remember that galactosamine is also the blood type A antigen. Thus, upon hydrolysis (acid breakdown) in the stomach, chondroitin becomes free A-antigen. This would not be to much of a problem in type A or AB, who recognize A antigen as "self," but could be a major problem in types O and B, who recognize A antigen as "non-self." In essence, taking chondroitin sulphate if you are either O or B is the chemical equivalent of giving yourself a bad blood transfusion.

Joyce

Hi Joyce,

Could you elaborate on why Dr. D'Adamo does not recommend that type Os take vitamin E? I understand that people with type O supposedly have no clotting problems, or their blood is thinner? And the consumption of vit E could possibly contribute to longer bleeding times? If this is true I would like to see the research behind this. Thanks.

Jim

Hi Jim!

Sorry to burst Dr.D'Adamo's bubble then, if he claims blood type O's do not clot! I have FVL, a genetic clotting disorder, and I am on an email list with over 1000 people from all over the world. We have done repeated informal surveys of our group members, and ALL blood types are evenly (as in 'percentage wise like in the general population') represented among us clotters!

Karen

Jim,

I don't remember, but you could ask on the forum:

<http://www.dadamo.com/cgi-bin/Blah/Blah.pl?>

Karen,

Re "if he claims blood type O's do not clot"

I don't think I have ever read this sweeping statement - or it were so 'O's would have died out pretty rapidly!

Joyce

Jim - I have his book...I'll check to see if he gives a reason.... I'm type O and don't recall any mental note of alarm when I read it about clotting issues for me, personally.

On the contrary, I surely did have a clot in the LAA after my very last AF event after ablation...as you recall.

I take 800 IUs a day of vitamin E as directed by my physician since my last profile indicated I was low in vitamin E.

Of course, we are all different, but this ought to say something.

You know there are two widely divided factors which either do or do not think his Blood type theory is valid.

I just found it interesting - in general... since I'm type O and also check out with the Metabolic Typing Diet that I also require more protein and any of the other diets where you analyze how you feel eating certain foods....so in one respect, D'adamo seems to be on target.

I'll look it up and post later.

Jackie

Jim - found it more quickly than I thought I would. He doesn't have a list of study and references... but rather groups topics and lists relevant resources. It's not like a formal study or textbook...

He says this about Type O and Vitamin E.

p. 91... "Likewise, I would not recommend vitamin E supplements for type Os because they might also complicate type O tendencies toward slower blood clotting. Instead derive vitamin E from foods in your diet.

E-Rich foods acceptable for type Os - vegetable oils, liver, nuts recommended leafy green vegetables."

That said.... and as I previously mentioned, my functional medicine MD knows I'm Type O and still recommends 800 IU a day of the right type of vitamin E and 6,000 mg. of Omega 3 fish oils... so I don't think you have any concerns about taking such a minimal dose. In addition, I'm doing just fine with increasing to 4,000 FUs of NKinase so far.

Jackie

Well done Jackie.

I have a have already noticed the following last week. I thought that's funny. I only cut them last week and then several days latter you post this:

"Fingernails grow when on NK because it restores microperfusion in extremities."

Also add toe nails and dare I say it - hair? (I'm lucky, I have all mine too but its going grey - damn. Where's the Grecian).

Goodness me. You've stumbled onto something here. You have found something that cholesterol, Blood pressure and blood thinning meds. You'll put the drug companies out of business.

Does natto the food have an effect on nitrous oxide in the body?

Cheers

Dean

Source: Allergy Research Group publication – “Focus” April 2003.

“New studies are indicating lower doses of warfarin (Coumadin). I believe a physician should use warfarin and nattokinase together and titrate the warfarin downward to maintain a prothrombin time of 18 – 20 seconds. This protocol will decrease the harmful effects of warfarin, while maintaining a safer level of blood anticoagulation with the positive effects of nattokinase.

I suggest this protocol for physicians who are uncomfortable with eliminating warfarin completely, but who are interested in minimizing the negative effects of warfarin, and achieving the positive effects of nattokinase. This protocol could save thousands of patients from the harmful effects of warfarin.” Ralph E. Holsworth, Jr. DO... leading nattokinase researcher.

Note: Dr. Holsworth only refers to nattokinase in the form of NSK-SD... the purified, isolated, tested enzyme that is free of vitamin K. This is critical if being combined with warfarin/Coumadin. Otherwise, it could work in reverse.

Jackie

I prefer to take as many of my supplements as possible in powder form so I can mix them together and not have to swallow so many pills.

The only company I have found that supplies NSK-SD with 20,000 FU/gram in powder form is www.beyond-a-century.com Their price is \$29.50 for 50 grams of the powder, or about \$6/gram for the potent stuff. Compare to others selling for \$10 per gram or more.

Specifically, go to <http://www.easycart.net/cgi-bin/BeyondACenturyInc./search.cgi>

They also sell it in capsule form.

I have no connection with this company other than as a long time customer. I have purchased from them for over 10 years.

Gordon

I went to that site, but it doesn't say anything about NSK-SD, just NK...

Karen

But it does say Vit. K free extract, which as I understand, is the issue with Natto. Perhaps there is a patent or copyright issue with the exact term NSK-SD. I'm glad you mentioned it and I'll check with them on Monday when they open.

Nattokinase

\$29.50

NEW! NATTOKINASE powder @ >20,000FU/gram (200 x 36mg doses)- Our size, 50 grams, 7.2g diluted in 42.8g inositol, NATTOKINASE (NK) is an isolated, purified, and Vit K free fibrinolytic enzyme extracted from a traditional fermented Japanese soy-cheese, Natto. Natto has long been used as a folk remedy for supporting improved circulation and for heart & vascular problems, with no reported toxicity in over 1000 years of use. In fact, modern studies show safety at 700 times normal dose! NK may be the strongest natural thrombolytic enzyme, closely resembling natural plasmin, supporting the body's ability to break up and dissolve unhealthy coagulation and blood clots when taken orally in as little as 100mg/day. Also it is said to be a natural ACE inhibitor. Usual dose is 36-72mg (720-1440FU) with 8 oz water 2-3x/day, with or without food. NK is said to remain active for 8-12 hours. Check exciting specific info and endorsements by web-searching "nattokinase". Those who are taking anticoagulant drugs, have bleeding disorders, or are pregnant or lactating should not take NK unless under the supervision of a medical professional. Many are taking NK with arjuna, serrapeptase, bromelain, or Germanzyme, and arginine. Compare the price of our powder to capsules at \$10-15 per gram. 50 grams \$29.50 Code 779.0

Found it in the catalogue section Enzymes.

Gordon

Gordon - my only concern would be that the enough of a powder form doesn't survive the digestive process. The NSK-SD is typically encapsulated in a gelcap even though it is said to survive digestion...so that makes me think it needs some mode of transmission through the stomach to the small intestine where it is absorbed. Do not misconstrue this as saying it needs to be enteric coated; it does not, but there is a reason it is encapsulated.

With the gelcaps, you can open and squeeze out the dose.

I, also, don't see the NSK-SD designation. The assay numbers I posted in my Part 2 on NK Update, indicated that most other brands did not deliver the FUs as advertised. You may trade convenience for an ineffective number of FUs...which, then would not be either therapeutic or cost effective.

There is no monitoring or policing for a product to deliver what the label indicates.

Jackie

Was filing my stack of nattokinase papers and noted a paragraph that I had marked but was not included in my Part 2 summary because it came from another resource, Martin Milner, ND. and Kouhei Makise, MD.

This just reiterates the importance of reducing fibrin.

Directly quoted:

Clot Formation and the Evolution of Atherosclerosis

The evolution of atherosclerosis is a multidimensional process. A patient can simply develop a local thrombus or clot in a coronary artery causing a heart attack; in a branch of the carotid arteries causing a stroke; or in a lower-extremity vein causing a pulmonary embolism if mobilized.

As their principal structural component, these clots consist of fibrin strands. Thrombi develop and are maintained via the gradual accumulation of excessive fibrin and/or by the inability of the body to break down the fibrin strands effectively into adequate amounts of fibrin-degradation products.

Clots can form in arteries, in veins, or in the heart chambers. Thrombi in the arteries form under high pressure and flow

conditions and are composed of platelet aggregates bound together by intrinsic fibrin strands. Clots in veins form under low flow conditions, are composed predominantly of red cells with few platelets, and contain large amounts of interspersed fibrin strands. These thrombi may remain static in a vessel. However, clots can also become mobile or embolize. If a clot travels from a lower extremity vein to the lungs, the results is a pulmonary embolism. Similarly, if a clot moves from the heart or the carotid artery to the brain, it causes a stroke. And, finally, if a clot travels to a position that occludes or blocks the coronary artery, it causes a heart attack.

There are several other theories involving the formation of occluded vessels leading to heart attacks and strokes. It is generally accepted that, in order for arteries to harden and occlude, platelet adherence must increase.

This process is worsened by excess fibrin. Platelets release a platelet-derived growth factor causing the smooth-muscle cells on the walls of arteries to proliferate. The resultant smooth muscle cells have an increased permeability to platelets and lipids, especially low-density lipoprotein (LDL). As LDL increases, it penetrates further into the arterial wall. Plaque forms in the arterial wall as a benign neo-plastic growth (a monoclonal mutation). Excess fibrin, free radicals, chronic inflammation, oxidized cholesterol, oxidized LDL, environmental hydrocarbons, and other factors aggravate mutation.

According to the free-radical hypothesis, lipid peroxides damage the arterial walls enhancing wall permeability further, as well as additionally increasing the of lipid oxidation, especially that of LDL.

Free radicals invade the arterial wall and activate cell proliferation and abnormal cell duplication. The newly mutated cells migrate into the arterial wall and induce plaque formation. This cell proliferation increases the surrounding clot growth or thrombus formation. T-cell antibodies regulate this process. The resulting lesions are atheromatous plaque. The surrounding thrombi form primarily from modified smooth-muscle cells, LDL, and fibrin.

Naturally-occurring thrombolytic enzymes that dissolve clots are generated in the endothelial cells of blood vessels. As people age, production of these enzymes slows and the blood is more prone to coagulate. This causes clotting. However, clots can form at any age. Therefore, it makes good preventive medical sense even for young people to be encouraged to consider the use of a product such as natto or nattokinase for preventive medicine.

Source:

Published in *Alternative & Complementary Therapies*; June 2002

Martin Milner, ND. president and medical director of the Center for Natural Medicine, Inc. Portland, Oregon; Kouhei Makise, MD, is the medical director of the Kyoto Imadegawa Makise Clinic in Kyoto, Japan

Jackie

Updated December 10, 2007

This update was prompted by a post by Dean and response by Hans a while back. It took me quite some time to make contact with Dr. Holsworth and then Thanksgiving arrived and the project was set aside again. My apologies for the delay. Refer to: http://www.afibbers.net/forum/read.php?f=6&i=15292&t=15128#reply_15292

Since my original Conference Room Nattokinase posts 39 and 40 and other updates, Dr. Holsworth has provided more insight and information from new studies and with this post, I hope to help clear up the confusion.

While these are two different nutrients, they are somewhat interrelated when we discuss them, so it seems appropriate to address both.

I'll start with a short piece on nattokinase and then concentrate on the vitamin K2 discussion because while vitamin K2 (MK7) dosing must be supervised for those on warfarin/Coumadin, the use of this important vitamin is very exciting and encouraging to help prevent soft tissue calcifications, prevent osteoporosis and actually reverse arterial calcifications in everyone. It can even be used by those on anti-coagulant therapy when supervised by a physician. This is huge for

people who must use warfarin because of prosthetic heart valves.

Studies indicate that long-term warfarin/Coumadin use contributes to soft tissue calcifications as well as osteoporosis, so this is both important and encouraging news for everyone who takes this blood-thinning drug.

But, it's important to know and understand the difference in vitamers or isomers of K as it is the form of K2 (MK7) and not vitamin K1 that is involved in this benefit.

Jackie

Part I

Be aware of the names. The enzyme is nattokinase; the cheese curd or food is called natto. Do not slip into the habit of substituting one name for the other or confusion reigns.

Nattokinase

It seems that as more people have been using the enzyme nattokinase (NK), the comfort level in recommending adjuncts along with it have become acceptable. Initially, recommendations were conservative. Remember the enzyme used must be of the NSK-SD designation which is an assayed form to ensure purity from any residual vitamin K from the manufacturing process.

Nattokinase & aspirin

Since they don't work on the same clotting mechanism... aspirin being anti-platelet and the enzyme, nattokinase, working on fibrinogen levels to lower blood viscosity, both can be used together. Just be aware of the minor risk potential for nosebleeds as a sign of too much aspirin.

Natto food & warfarin/Coumadin

The only time an afibber needs to be concerned about using natto food is if they are on warfarin/Coumadin. This is because of the higher vitamin K2 content in the form Menaquinone 7 (MK7) that is predominant in natto food. In natto food, the amount of MK7 is not regulated, measured or standardized for consistent quantity. Since MK 7 has a long half life, 3 days,(meaning it stays in the body and will be cumulative if eaten daily), it would exceed the maximum limit of not over 100 mcg. K2 (MK 7) safe to use along with warfarin.

Dean states his 50 gram serving yields an approximate equivalency of MK 7 as 387 micrograms.

You'll see from the explanation that follows, this amount, in one dose for a person using Coumadin, would be far over the 50-100mcg range where warfarin interference is detected. Further, to use it daily - since MK 7 is cumulative due to long half-life - would be a high risk for anyone on Coumadin or similar anti-coagulants to consume the natto food. This is not a problem for others.

In the foregoing referenced forum post, Hans points out that the study cited used 45 mg. MK 4 which is not the same as MK 7 as you'll note from the information that follows.

I asked Dr. Holsworth about the studies and he commented that vitamin K researcher, Dr. Vermeer is not convinced that MK-4 is very useful at all because of the small Japanese trials, short half-life, limited extrahepatic function and huge doses required.

Part 2

Vitamin K 2

The confusion typically lies in the designations of K, K1, K2, MK4, MK7 even among supplement manufacturers in identification of the vitamin K derivative or isomer form they use in products. Hopefully this will serve to clarify.

There is abundant literature explaining the various forms of vitamin K, K1, 2, and K3 (synthetic and not useful). The classic publication comes from M J Shearer, published in Lancet, Vol 345, January 28, 1995.

Vitamin K1 is phylloquinone aka phytonadione and the highest content is found in leafy green vegetables such as lettuce, broccoli, spinach kale and makes up about 90% of our vitamin K intake in a typical Western diet. The absorption of vitamin K1 from vegetables is only about 10%. Some K1 is converted to MK 4.

[u/] Vitamin K2 has two major vitamers, Menatetrenone (MK-4) and Menaquinone 7 (MK7) which have a more restricted distribution in the diet than phylloquinone, with nutritionally significant amounts of MK-4 only occurring in animal meat and liver and higher menaquinones (MK 7) through MK9) occurring in fermented products produced by bacteria like natto, cheese and cheese curd. Menaquinones make up the other 10% of vitamin K intake and can be synthesized in the gut by microflora and also made from K1

An important distinction, MK 4 appears to be synthesized by animals (including humans) from phylloquinone. MK 4 is found in a number of organs other than the liver at high concentrations than phylloquinone. However, MK4 has a very short half-life time (about 1 hour) whereas MK7 has the much longer half-life of 72 hours and reaches a steady tissue level after about two weeks of dosing.

This would explain why the study referenced by Hans used large doses of MK4 (1 and 45 mg/day) because it is much more difficult to maintain constant levels.

Only 3-8 % of phylloquinone (K1) is absorbed and then is hoarded by the liver. Menaquinone-7 is greater than 90% absorbed and since it is lipophilic, it is carried by lactate dehydrogenase (LDH) from the liver to the systemic circulation providing MK-7 to the arteries and bones.

Current research concludes that the MK 7 form of K2 is the most effective for the therapeutic intention of reducing and preventing soft tissue calcification and/or osteoporosis. It is important to emphasize that it is vitamin K2 or MK 7 and not vitamin K1 that is involved in this therapeutic benefit.

In some products and studies the Vitamin K2 is MK-4 which is a shorter chain and is not absorbed as well. MK-4 does not work outside the liver because it is less lipophilic than MK-7 (menaquinone-7). MK-4 is also animal-derived (liver) where MK-7 is derived from natto and is non-GMO.

Supplemental forms of both K1 and K2 are well absorbed as long as they are taken with some dietary fat to stimulate bile secretion.

Once again....vitamin K2 – mainly - as MK 7 but also MK 4 has benefit with two important roles –

It helps keep calcium out of soft tissues such as blood vessels and aorta (preventing calcification deposits), bone spurs and also with the help of vitamin D3, directs calcium into bones to reduce risk of osteoporosis. This is especially important for those using warfarin/Coumadin whether or not they are afibbers.

Earlier studies indicated benefits from MK4 but later studies confirm that MK 7 is actually the most beneficial.

Both forms or vitamers of vitamin K can safely taken together.

The rest of this discussion references only MK 7

We sometimes worry about getting too much vitamin K since it is involved in the clotting mechanism and this is of special interest to all afibbers but especially those using warfarin/Coumadin.

Important Note

Supplemental vitamin K 2 in the form of MK 7 can be used with warfarin when physician directed so INR levels can be closely monitored as interference with warfarin by (K2) MK 7 is seen in doses ranging from over 50 to 100 micrograms (mcg).

Aspirin (ASA) is an anti-platelet aggregation inhibitor and not a Vitamin K antagonist so MK-7 and ASA are very compatible for those not using an anticoagulant.

Vitamin K2 as Menaquinone or MK 7

I note that many are labeling K2 as the active ingredient and then listing anywhere from 1 – 45 milligrams per capsule/dose. This is misleading and needs clarification as they are generalizing the K2 term and not specifying that it is really menaquinone 4 and not MK7 – which is the one studies find to be most effective.

The Value of Supplemental Vitamin K 2 – MK 7

The liver is the place of clotting factor synthesis and utilizes dietary vitamin K very efficiently for that reason. It is questioned if the RDA for vitamin K is adequate to cover the requirements outside the liver.

It has been suggested that perhaps all or most all of apparently healthy adults are subclinically vitamin K deficient based on the findings that increased circulating levels of undercarboxylated osteocalcin were shown to be associated with bone loss and osteoporosis in post menopausal women and undercarboxylated MGP is associated with arterial calcification.

It helps to point out that the liver requires so much vitamin K, it can leave the cartilage and bone CGCA (the amino acid gamma carboxyglutamic acid) proteins with inadequate levels so the vitamin K requirements for the cardiovascular system and cartilage (for bone production) may not be met even though normal clotting factor production occurs because this goes on in the liver (and the liver gets first call on vitamin K utilization.)

The body can store about one month supply of vitamin K. Antibiotics interfere with intestinal bacterial production of vitamin K.

[At the end of this report, I'm listing several other observations currently being studied linking vitamin K deficiency with chronic degenerative disease conditions. Be sure to read through to the end.]

Studies indicate that K2 (MK 7) is superior to K1 for vascular health, carotid artery elasticity, and maintenance of bone strength and since it has the long half-life and bypasses the liver is thought to be the obvious choice for enrichment of dietary supplements and functional foods used for disease prevention in healthy subjects.

Reference:

Vitamin K: The coagulation vitamin that became omnipotent Cranenburg EC, Schurgers LJ, Vermeer C. *Thromb. Haemost.* 2007 Jul;98(1):120-5.

http://groups.google.com/group/sci.med.diseases.osteoporosis/browse_thread/thread/015aa062041c066e (I have the full text – email me for the file)

Unless one is on warfarin/Coumadin, there is no reason to limit intake of vitamin K2 in the form of MK 7.

Good news about arterial calcification caused by anti-coagulant (warfarin) therapy. Studies show that use of Vitamin K2/MK 7 – in supervised doses by a physician, can eliminate the risk of not only the calcification of soft tissue but also the risk of osteoporosis that also accompanies anti-coagulant therapy. MK-7 has demonstrated its ability to support de-arterial calcification and increase arterial compliance by 50%.

Dr. Holsworth works with physicians to instruct them on safe dosing and monitoring of the INR stability. The NZymeCeutical product he supplies called – MK2 - is the purified form and is assayed twice before sending to the patient – the same as with their Nattokinase product.

The MK-7 product is concentrated so 1 mg of powder = 1 microgram of MK-7.

You can order NZyme MK7 from NZymeCeuticals

Phone 877-460-1600.

NZyme MK-7 pharmaceutical-grade capsule contains 100 mcg (micrograms) of pure active menaquinone-7 and are exclusively non-GMO (non-genetic mutant organisms).

Call for current pricing. The last order I received was \$12 for 30 capsules plus shipping.

Visit <http://www.nzymeceuticals.com/docs/home.html> to check out the homepage and links and note some of the articles offered on Dr. Holsworth's blog.

I urge you to read the following referenced studies and then share them with your physician if you are on warfarin. When you see the names Shearer, Schurgers or Vermeer regarding vitamin K research, know that these are the foremost experts. Dr. Holsworth collaborates with them for his product research.

If you can't access these online, then just email me and I'll send to you from my computer files.

References

Vitamin K: The coagulation vitamin that became omnipotent

Thromb. Haemost. 2007 Jul;98(1):120-5. Cranenburg EC, Schurgers LJ, Vermeer C.

Department of Biochemistry,

University of Maastricht, P.O. Box 616, 6200 MD

Maastricht, The Netherlands. E-mail: c.verm...@bioch.unimaas.nl.

Vitamin K, discovered in the 1930s, functions as cofactor for the posttranslational carboxylation of glutamate residues. Gammacarboxy glutamic acid (Gla)-residues were first identified in prothrombin and coagulation factors in the 1970s; subsequently, extra-hepatic Gla proteins were described, including osteocalcin and matrix Gla protein (MGP). Impairment of the function of osteocalcin and MGP due to incomplete carboxylation results in an increased risk for developing osteoporosis and vascular calcification, respectively, and is an unexpected side effect of treatment with oral anticoagulants.

It is conceivable that other side effects, possible involving growth-arrest-specific gene 6 (Gas6) protein will be identified in forthcoming years. In healthy individuals, substantial fractions of osteocalcin and MGP circulate as incompletely carboxylated species, indicating that the majority of these individuals is subclinically vitamin K-deficient.

Potential new application areas for vitamin K are therefore its use in dietary supplements and functional foods for healthy individuals to prevent bone and vascular disease, as well as for patients on oral anticoagulant treatment to offer them protection against coumarin-induced side effects and to reduce diet-induced fluctuations in their INR values.

PMID: 17598002 [PubMed - in process]

Related Links

Role of vitamin K and vitamin K-dependent proteins in vascular calcification. [Z Kardiol. 2001] PMID:11374034

Primary structure of bovine matrix Gla protein, a new vitamin K-dependent bone protein. [J Biol Chem. 1985]

PMID:3877721

Adverse effects of coumarin anticoagulants. [Drug Saf. 1993] PMID:8260120

Effects of vitamin K on bone mass and bone metabolism. [J Nutr. 1996] PMID:8642454

Novel conformation-specific antibodies against matrix gamma-carboxyglutamic acid (Gla) protein: undercarboxylated matrix Gla protein as marker for vascular calcification. [Arterioscler Thromb Vasc Biol. 2005] PMID:15961706

Is vitamin K deficiency more common than thought?

<http://www.nutraingredients.com/news/ng.asp?id=78289-vitamin-k-mk-natto>

*"Regression of warfarin-induced medial elastocalcinosis by high intake of vitamin K in rats"*10.1182/blood-2006-07-035345

<http://bloodjournal.hematologylibrary.org/cgi/content/short/109/7/2823>

Vitamin K may reverse arterial calcification

Article by Stephen Daniels 3/04/07

<http://www.nutraingredients-usa.com/news/ng.asp?id=72666-vitamin-k-mk-cardiovascular-disease>

Vitamin K administration to elderly patients with osteoporosis induces no hemostatic activation, even in those with suspected vitamin K deficiency.

Osteoporos Int. 2001 Dec;12(12):996-1000

<http://www.ncbi.nlm.nih.gov/sites/entrez>

Vitamin K2 higher bioavailability than K1, say scientists

<http://www.nzymeceuticals.com/pdf/Vitamin%20K2%20-%20K1.pdf>

Vitamin K-containing dietary supplements: comparison of synthetic vitamin K1 and natto-derived menaquinone-7

Blood. 2006 Dec 7 - Schurgers LJ, - Teunissen KJ, - Hamulyak K, - Knapen MH, - Vik H, - Vermeer C. VitaK & Cardiovascular Research Institute CARIM, University of Maastricht, Maastricht, Netherlands.

Vitamin K is a cofactor in the production of blood coagulation factors (in the liver), osteocalcin (in bone) and matrix Gla-protein (cartilage and vessel wall). Accumulating evidence suggests that for optimal bone and vascular health relatively high intakes of vitamin K are required. The synthetic short chain vitamin K1 is commonly used in food supplements, but recently also the natural, long chain menaquinone-7 (MK-7) has become available as an OTC supplement.

The purpose of this paper was to compare in healthy volunteers the absorption and efficacy of K1 and MK-7. Serum vitamin K species were used as a marker for absorption, and osteocalcin carboxylation as a marker for activity. Both K1 and MK-7 were absorbed well with peak serum concentrations at 4 h after intake.

A major difference between both vitamin K species is the very long half-life time of MK-7, resulting in much more stable serum levels and accumulation of MK-7 to higher levels (7-8 fold) during prolonged intake.

MK-7 induced more complete carboxylation of osteocalcin and hematologists should be aware that preparations supplying ≥ 50 microg/day of MK-7 may interfere with oral anticoagulant treatment in a clinically relevant way.

PMID: 17158229 [PubMed - as supplied by publisher]

http://www.ncbi.nlm.nih.gov/sites/entrez?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=17158229&query_hl=1&itool=pubmed_docsum%2F

Intake of Fermented Soybeans, Natto, Is Associated with Reduced Bone Loss in Postmenopausal Women: Japanese Population-Based Osteoporosis (JPOS) Study

Yukihiro Ikeda*, Masayuki Iki*, Akemi Morita*, Etsuko Kajita, Sadanobu Kagamimori**, Yoshiko Kagawa and Hideo Yoneshima Nutritional Epidemiology 2006 American Society for Nutrition J. Nutr. 136:1323-1328, May 2006

<http://jn.nutrition.org/cgi/content/abstract/136/5/1323>

Nattokinase references

I have a pdf file of an article published in The American Journal of Health-System Pharmacy Alternative Therapies "Nattokinase for prevention of thrombosis" which I will forward if you send me an email and request it.

Nattokinase for prevention of thrombosis

Tai and Sweet Am J Health Syst Pharm.2006; 63: 1121-1123

Nattokinase- The Blood Desludger

by Ralph O. Holsworth, Jr. D.O.

<http://www.nzymeceuticals.com/docs/naturalProduct.html>

<http://www.naturalproductsinsider.com/articles/06oct16feat03arefs.html>

More on Vitamin K2

Anti-inflammatory actions shown in research indicate as the body ages, increased levels of the inflammation-promoting cytokine Interleukin 6 (IL 6) occur. When IL-6 becomes out of balance with the other cytokines, inflammation accelerates. Research notes that in people with arthritis, Alzheimer's, and atherosclerosis have higher levels of IL-6. A study by National Research Institute in Italy found that subjects with the highest levels of IL-6 were almost twice as

likely to develop mobility related disabilities.

Diabetes developed in test animals when vitamin K deficiency was induced in a Japanese study. The pancreas has the second highest concentration of vitamin K in the body and plays the major role in blood glucose and insulin regulation.

Antioxidant – research indicates vitamin K has antioxidant activity comparable to vitamin E and CoQ10.

Alzheimer's About 25% of the population have a genetic predisposition for developing Alzheimer's disease if they carry the E4 form of the lipoprotein apoE. People with this gene also have been found to be low in vitamin K. Since calcification and development of lesions in blood vessels supplying the brain are believed to be a component of Alzheimer's development, it would be good to investigate high-dose vitamin K therapy as a preventive measure.

Liver Cirrhosis –related liver cancer

Japanese research indicated vitamin K2 may be preventive of liver cancer caused by viral cirrhosis. There is a 2004 JAMA study discussing 40 women treated with 45 mg. vitamin K2 per day. It was found to decrease the risk of development possibly by delaying the onset. The women were followed for over 7 years and the women who did develop liver cancer was significantly smaller in the vitamin K2 group. It is thought that a substance called geranyl-geraniol which is a by-product of K2 induces cell death in tumor cells and may be important in cell growth inhibition. A research note indicated ".....vitamin K2 decreases the risk of liver cancer to about 20% compared to the control group." This was just a preliminary report at that time back in 2004.

(JAMA, 2004 July 21:292(3)358-61 Role of vitamin K2 in the development of hepatocellular carcinoma in women with viral cirrhosis of the liver.

Reference:

Focus 2005 – "Vitamin K2 Putting Calcium Where it Belongs"
Allergy Research Group publication.

I have a reference list for these benefits. You can email me for them.

Vitamin K supplementation can improve stability of anticoagulation for patients with unexplained variability in response to warfarin,"

Blood First Edition Paper, prepublished online November 16, 2006; DOI 10.1182/blood-2006-09-049262.

Vitamin K in High Doses May Reverse Arterial Calcification and Decreased Arterial Distensibility

Reference: "Regression of warfarin-induced medial elastocalcinosis by high intake of vitamin K in rats," Schurgers LJ, Spronk HM, et al, Blood, 2006 Nov 30; [Epub ahead of print]. (Address: Cardiovascular Research Institute, Maastricht University, Maastricht, Netherlands).