

\$4.50

Squalamine

Shark Liver Oil from the Pristine Waters of Norway

Another in the Life Sources' Client Education Series

This pamphlet is complimentary to Life Sources' clients.

This pamphlet may be purchased by the general public from:

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The information contained in this booklet is for educational purposes only. It is not to be considered medical advice, prescriptive or diagnostic. See your physician for qualified health care.

History of Shark Liver Oil

Fisherman of the Sarga Bay on the Izu Peninsula of ancient Japan called it "Samedawa" or "cure all". The sharks they fished from the bottom of the bay measuring over 1000 meters deep had delectable meat. They specially valued its liver oil which they ingested regularly because they felt better whenever they took it.

In 1758, Swedish botanist Carolus Linnaeus discovered and claimed the great health and medicinal value of oil extracts from deep-sea sharks such as the spiny dogfish. In the Micronesian Islands, a "miracle working" shark oil has been an age-old remedy for various sickness and diseases as well as a familiar source of strength, stamina and virility. The historic health benefits of shark liver oil have always been a mainstay in Scandinavian folk medicine.

In Norway and Sweden, shark liver oil was used traditionally by fishermen for healing wounds and irritations of the respiratory tract and alimentary canal. In China, the extract of deep-sea shark has been recorded in the ancient pharmaceutical book "Honzukomuko".

In Spain, ancient mariners regularly took "aceite de bacalao" or oil of the great fish. They claimed a greater resistance to colds and various other diseases because of it. Even in Ernest Hemingway's book, "The Old Man and the Sea" it says of the old man... "He also drank shark liver oil each day from the drum in the shack where many of the fishermen kept their gear....It was very good against all colds and gripes and it was good for the eyes."

In 1906, Dr. Mitsumaru Tsujimoto made an in depth research on shark liver oil, specifically that of the deep-sea shark species; the "Squalidae Group", and discovered that an extremely great quantity of unsaturated hydrocarbons was contained in the liver oil of these deep-sea sharks. He later called the oil "Squalene". Dr. Tsujimoto's brilliant discovery was not fully established until 1931 when Prof. Calour, a Nobel Prize awardee at Zurich University, Switzerland certified that squalene shark liver oil is a lipoprotein, an unsaturated hydrocarbon with a chemical structure $C_{30}H_{50}$. This means simply that it mainly contains 30 carbon atoms and 50 hydrogen atoms. Dr. Calour in his study of the chemical behavior of this unsaturated hydrocarbon revealed that the compound is naturally lacking 12 hydrogen atoms in its original form for it to be stable (the stable compound is $C_{30}H_{62}$) and will "capture hydrogen atoms" from any source available to make it stable and saturated. The most abundant source of hydrogen is water & shyp; H_2O . (Our food contains much H_2O , body fluids and blood is mainly H_2O , body cells contain much water, the human body is actually 70% water). Theoretically, $C_{30}H_{50}$ (squalene) reacts with water (H_2O) this way: $C_{30}H_{50} + 6H_2O$ & shyp; $C_{30}H_{62} + 3O_2$. By capturing the hydrogen molecules, 3 oxygen molecules from the water are released. This shows that squalene, through a

natural reaction with water, is capable of providing oxygen essential for healthy metabolism. This basic scientific theory shown in the above formula should provide us an insight how squalene might work when present in our bodies.

Amazing discoveries continue to be made on shark liver oil. More careful scientific studies are being made to thoroughly examine its full composition and health benefits. In 1922, scientists isolated the therapeutically active component in shark liver oil called alkoxyglycerols.

Since the 1950's, this component has been studied clinically for its healing benefits in over 50 countries. Alkoxyglycerols (AKG's) in mother's milk, is the key substance that provides infants with natural protection and immunity against infection as it helps in the continued development of their immune system. There are 10 times more AKG's in mother's milk than in cow's milk. Science has proven that breast fed babies are more resistant to infection and diseases even all through life because of the more abundant ingestion of AKG's in their early physical development. This immune supportive nutrient, Alkoxyglycerols (AKG's) is the primary active component in shark liver oil. In fact, there are 1000 times more AKG's in shark liver oil than mother's milk. and human adults commensurately need 1000 times more AKG's than infants in the need for continuing boosting and enhancing ones immune system.

In the 1990's Johns Hopkins University discovered another ingredient in shark liver oil, Squalamine, found to be effective against many yeast, fungus and bacterial infections, and especially offers promise to immune compromise persons such as AIDS and cancer patients. Shark liver oil may well contain the secret of improved health and longevity for mankind.

International Research Excerpts on Squalamine and Shark Liver Oil

An excellent, all natural nutritional supplement, Life Sources' Squalamine is the optimum shark health product. It is composed mainly of immune-enhancing nutrients, squalamine, alkoxyglycerols (AKGs), squalene and is the reason for the SHARK'S PROVEN HIGH RESISTANCE TO CANCER & OTHER DISEASES AND UNSURPASSED STAMINA.

NORTH AMERICAN RESEARCH EXCERPTS

I. Shark Liver Oil exhibits a remarkable ability to help strengthen the human immune system and is perhaps the most amazing immune enhancer ever discovered. Some of the benefits of Shark Liver Oil seen in the research include:

- Improvement of circulatory system
- Increase in energy level
- Lessening of pain
- Improved skin, less wrinkles

Control of chronic disease
Control of arthritis
Control of allergies
Control of diabetes
Control of asthma
Control of candidiasis
Healing of burns
Healing of infections & skin lesions
Reduction of various symptoms of cancer
Increase in white blood cells
Increase in the excretion of mercury
Clearing of eczema

II. Shark liver oil also contains more exotic ingredients like Squalamine, another natural broad spectrum antimicrobial, effective against many yeast, fungus and bacterial infections, and especially offers promise to immune compromised persons such as AIDS and cancer patients. (See TV Feature Summary below.)

SWEDISH RESEARCH EXCERPTS

I. Shark Liver Oil has been extensively studied in Sweden and has now much scientific evidence to back it up. A main component, Alkoxyglycerols (AKG's) helps the body protect against three types of common offenders, namely viral, bacterial, and fungal infections. Several of the nutrients of shark liver oil bring benefits ranging from production of red & white blood cells, and platelets that make blood clot, halting progression of degenerative diseases like arthritis and osteoporosis and remission of disorders associated with allergy and asthma. Researchers believe that one reason sharks rarely develop cancer is due to the high level of Alkoxyglycerols (AKG's) in their livers.

II. Alkoxyglycerols (AKG's) in Shark Liver Oil, concentrated through molecular distillation, is a promising substance that shows significant impact in boosting the immune system, and there has never been any adverse effects observed from them.

JAPANESE RESEARCH EXCERPTS

Squalene are unsaturated hydrocarbons that react naturally with water existing in all cells of all living creatures and comprising the bulk of blood. When it does, scientifically, 3 oxygen molecules are released and can be explained the following chemical equation: $C_{30}H_{50}$ (squalene) + $6H_2O$ (water) -----> $C_{30}H_{62}$ + $3O_2$ (OXYGEN)

It is believed that cancer and other diseases are greatly attributable to the lack of oxygen in the afflicted area. Interestingly, certain carcinogenic chemicals were inactivated when exposed to Shark Liver Oil over a period of time.

Shark Liver Oil is popular in the Orient where it is highly regarded as a cancer preventive, an immunity system booster, a body oxygen enhancer, and a stamina builder. Regular users of LIFE SOURCES' SQUALAMINE RANDOMLY CLAIM resistance to colds and flu and other infections, youthful stamina, quick recovery from fatigue and weariness, more restful sleep, no constipation, less headaches, sharper mental alertness, renewed vitality, and a more radiant complexion.

FRENCH RESEARCH EXCERPTS

French scientists advocate the theory that "pain" is a signal to the brain that the body part that is aching lacks adequate oxygen. Proper body function greatly depends on adequate oxygen supply. (Shark Liver Oil is an oxygen enhancer for the body.)

Magainin News

1. Magainin Outlines Development Status of Angiogenesis Program

SOURCE: PR Newswire

DATE: Tuesday, May 5, 1998

PLYMOUTH MEETING, Pa., May 4 /PRNewswire/ via NewsEdge Corporation -- Magainin Pharmaceuticals Inc. (Nasdaq: MAGN) today outlined the development status of squalamine, its angiogenesis inhibitor for the treatment of patients with solid tumors.

Squalamine is being evaluated in human Phase I clinical testing at two sites, the Cancer Therapy and Research Center, San Antonio, Texas under the direction of Dr. Gail Eckhardt and the Lombardi Cancer Center, Georgetown University under the direction of Dr. Michael Hawkins. The objective of the Phase I clinical trials is to assess the safety and pharmacokinetics of intravenously administered squalamine in cancer patients. This information will be used to design subsequent efficacy trials in individuals with advanced stage malignancies using squalamine alone and in combination with commonly administered Chemotherapeutic agents.

Magainin has reported extensive preclinical data on squalamine, including collaborative work conducted by Dr. Joan Schiller, University of Wisconsin Cancer Center; work conducted by Dr. Henry Brem at The Johns Hopkins University School of Medicine; work conducted by Dr. Daniel Von Hoff at the Institute for Drug Development; and work conducted by Dr. Beverly

Teicher formerly of the Dana Farber Cancer Institute. These studies have shown squalamine to be efficacious in the inhibition of various cancers in animals, including lung, breast, brain and melanoma.

"The recent publicity regarding the role of angiogenesis in the treatment of cancer has intensified interest in our squalamine program," said Jay Moorin, Chairman, President and Chief Executive Officer of Magainin. "The success of squalamine in preclinical testing, both in our hands and in the hands of a number of cancer experts, has led us to the commencement of human clinical studies. We are pleased with the focus on the field of angiogenesis, an approach which has been the principal focus of our cancer program."

Squalamine was discovered in 1992 in the body tissues of the dogfish shark by a team led by Michael Zasloff, M.D., Ph.D., Executive Vice President of Magainin. It is the first of a novel class of naturally occurring pharmacologically active small molecules (the "aminosterols") under development at Magainin as human therapeutics. Squalamine has been shown in preclinical studies to be a new type of inhibitor of angiogenesis. Angiogenesis is the process of budding and growth of new blood vessels from existing blood vessels under the stimulus of a variety of growth factors. Squalamine inhibits the growth of tumor-induced new blood vessels in animal systems and also reduces the spread of tumor metastases.

Magainin Pharmaceuticals Inc. is a biopharmaceutical company engaged in the development of medicines for serious diseases. The Company's development efforts are focused on anti-infectives, oncology, and pulmonary and allergic disorders.

This announcement contains statements by the Company that involve risks and uncertainties and may constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements reflect management's current views and are based on certain assumptions. Actual results could differ materially from those currently anticipated as a result of a number of factors, including, but not limited to, the risks and uncertainties discussed in this announcement as well as those discussed under "Risk Factors" set forth in Item 1 of the Company's Annual Report on Form 10K for the year ended December 31, 1997, as filed with the Securities and Exchange Commission. Given these uncertainties, current or prospective investors are cautioned not to place undue reliance on any such forward-looking statements. Furthermore, the Company disclaims any obligation or intent to update any such factors or forward-looking statements to reflect future events or developments.

SOURCE Magainin Pharmaceuticals Inc.

2. Magainin Pharmaceuticals announces two presentations of pre-clinical data relating to the antiangiogenic activity of squalamine in an animal model of eye disease.

Wednesday, May 12, 1999 08:31 AM

PLYMOUTH MEETING, Pa., May 12 /PRNewswire/ -- Magainin Pharmaceuticals Inc. (Nasdaq: MAGN) today announced two presentations of pre-clinical data relating to the antiangiogenic activity of squalamine in an animal model of eye disease. Squalamine is the Company's angiogenesis inhibitor presently in Phase I clinical testing for the treatment of patients with solid tumors. These presentations occurred this week at the 1999 Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO) meeting held in Fort Lauderdale, FL, and last week at the 1999 Pediatric Academic Societies' Annual Meeting in San Francisco, CA.

Dr. Rosemary Higgins of Georgetown University Medical Center (Washington, D.C.) presented data from her abstracts on the effects of a single dose of squalamine in the treatment of new blood vessel formation in the eyes of neonatal mice. This model of retinopathy of prematurity mimics the process seen with premature infants, whereby excessive vascularization (neovascularization) occurs following neonatal exposure to high oxygen conditions and subsequent return to normal atmospheric oxygen levels as the infants' lungs mature. Retinopathy of prematurity is a devastating eye condition that frequently leads to chronic vision problems, carries a high risk of blindness and can further complicate the medical care of prematurely born infants.

In Dr. Higgins' model, squalamine given in a single dose after exposing neonatal mice to enriched oxygen conditions, significantly inhibits abnormal blood vessel formation, ($p < 0.001$) as judged both by a retinopathy scoring system evaluation of retinal whole mounts and by scoring of newly developing extraretinal blood vessels on retinal sections. Squalamine did not adversely affect the general health of the neonatal mice nor alter their normal growth and development.

"These positive results are equal to the strongest we have seen in this animal model and suggest squalamine is a potentially viable candidate in the treatment of ocular neovascularization," said Dr. Higgins. "This is a disease category that includes macular degeneration, diabetic retinopathy, and certain forms of glaucoma, as well as pediatric retinopathy of prematurity. We are continuing to work with the scientists at Magainin Pharmaceuticals to define how best to use squalamine in the clinic for eye disease."

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3. Magainin Pharmaceuticals Inc. (Nasdaq: MAGN) today announced data from the ongoing Phase I clinical trials of its anti-angiogenic inhibitor, squalamine.

Monday, May 17, 1999 08:30 AM

PLYMOUTH MEETING, Pa., May 17 /PRNewswire/ -- Magainin Pharmaceuticals Inc. (Nasdaq: MAGN) today announced data from the ongoing Phase I clinical trials of its anti-angiogenic inhibitor, squalamine. Data were presented at the American Society for Clinical Oncology (ASCO) meeting in Atlanta, Georgia on May 15th.

The Phase I clinical trials were designed to investigate the safety of squalamine as a single agent, at increasing doses and over multiple courses of treatment. Company investigators reported that squalamine is very well tolerated in advanced cancer patients enrolled to date in the studies.

Thirty-nine (39) patients with advanced cancer have been treated in two Phase I dose escalation studies, at the Lombardi Cancer Center at Georgetown University (under the direction of Dr. John Marshall), and at the Cancer Therapy and Research Center in San Antonio, Texas (under the direction of Dr. Gail Eckhardt).

"Squalamine has been very well tolerated in our patients in this single agent Phase I trial. Squalamine has shown promising anti-angiogenic activity in animal models, and further clinical investigation in combination with cytotoxic chemotherapy is warranted," said Dr. Eckhardt.

Phase II studies in non-small cell lung cancer in combination with the leading chemotherapeutic regimen are planned to begin this quarter. More than 170,000 people are diagnosed with lung cancer in the United States each year, and non-small cell lung cancer accounts for the vast majority of these cases.

It is the first of a class of naturally occurring, pharmacologically active, small molecules known as aminosterols which are under development at Magainin as human therapeutics. Squalamine has been shown in preclinical studies to inhibit angiogenesis and solid tumor growth early in the angiogenic cascade. In preclinical models of human tumors transplanted in animals, squalamine has inhibited the growth of and even eradicated lung, breast, prostate and brain tumors, and reduced the spread of tumor metastases.

Angiogenesis is the process of budding and growth of new blood vessels from existing blood vessels under the stimulus of a variety of growth factors. Angiogenesis is an essential event in many physiological processes including

normal growth and development, wound healing and menstruation, but it also plays a key role in tumor formation and growth. In tumor-induced angiogenesis, endothelial cells lining blood vessels are activated by mitogens produced by the tumor cells and surrounding stroma. These blood vessel endothelial cells eventually grow into and around the tumor, nourishing it and enabling it to thrive.

Squalamine is a small molecule with a unique mechanism of action that blocks endothelial cell activation, migration and proliferation by multiple growth factors. This intracellular blockage of multiple growth factors contrasts to most other angiogenesis inhibitors currently under development that focus on a single growth factor or on a single stage of blood vessel recruitment. Preclinical studies have demonstrated that this multi-faceted approach may allow squalamine broad application across many cancer types, and the Company believes this approach will have a greater likelihood for success than angiogenesis blockade strategies that target only one specific receptor or adhesion molecule.

4. Magainin Pharmaceuticals Inc. (Nasdaq: MAGN) today announced the commencement of Phase II human clinical testing of squalamine, an angiogenesis inhibitor, for the treatment of patients with advanced non-small cell lung cancer.

Thursday, June 24, 1999 08:30 AM

PLYMOUTH MEETING, Pa., June 24 /PRNewswire/ -- Magainin Pharmaceuticals Inc. (Nasdaq: MAGN) today announced the commencement of Phase II human clinical testing of squalamine, an angiogenesis inhibitor, for the treatment of patients with advanced non-small cell lung cancer. The clinical study began at the University of Wisconsin Comprehensive Cancer Center in Madison, Wisconsin, under the direction of Dr. Joan Schiller. A second site for the study is planned at the M.D. Anderson Cancer Center in Houston, Texas, under the direction of Dr. Roy Herbst.

The study will test the safety and efficacy of squalamine in combination with paclitaxel and carboplatin, the leading cytotoxic chemotherapeutic regimen for the treatment of advanced non-small cell lung cancer. Squalamine will be administered intravenously with each 3-week cycle of chemotherapy. It is anticipated that approximately 35 patients will be enrolled in the study. Efficacy will be assessed by the number of patients whose tumors stop growing, along with number of individuals who experience tumor shrinkage.

"Squalamine is an angiogenesis inhibitor which has shown promising results in preclinical models of cancer, with the best results seen in combination with cytotoxic chemotherapy," noted Dr. Schiller. "I look forward to gaining the first

human data on squalamine's safety and efficacy in advanced lung cancer when given with paclitaxel and carboplatin."

Both Dr. Schiller and Dr. Herbst have published preclinical research on squalamine in lung cancer. Dr. Schiller's participation in the study is supported by a R03 grant from the National Institutes of Health. In 1999, it is estimated there will be approximately 172,000 new cases of lung cancer diagnosed in the United States, and 159,000 related deaths.

Squalamine is a small, synthetically produced molecule with a unique mechanism of action that blocks endothelial (blood vessel) cell activation, migration and proliferation by multiple growth factors. Squalamine's intracellular blockade of multiple growth factors contrasts with many other angiogenesis inhibition programs. Preclinical studies have demonstrated that this multi-faceted approach may allow squalamine broad application across many cancer types, which Magainin researchers believe will have a greater likelihood for success than angiogenesis blockade strategies that target only one specific receptor or adhesion molecule. In preclinical models of human tumors transplanted in animals, squalamine has significantly reduced the growth of lung, breast, prostate and brain tumors, and in certain cases eradicated tumors and inhibited the spread of tumor metastases.

Squalamine is the first of a class of naturally occurring, pharmacologically active, small molecules known as aminosterols which are under development at Magainin Pharmaceuticals as human therapeutics.

Magainin Pharmaceuticals Inc. is a biopharmaceutical company engaged in the development of medicines for serious diseases. The Company's development efforts are focused on anti-infectives, oncology, and pulmonary and allergic disorders.

**Sample Description
Life Sources' Squalamine**

Product: Squalamine 1,000 mg
Size: 20 oblong
Color: Clear
Total Weight: 1,407.4 mg
Fill Weight: 1,000 mg
Shell Weight: 407.4 mg

Fill Ingredients:

Squalene1,000 mg

Shell Ingredients:

Gelatin.....238.4 mg

Glycerin.....132.3 mg

Water.....36.7 mg

Squalene 99% Pure

Appearance Clear and Brilliant

Color Almost Colorless

Taste Tasteless

	Free Fatty Acids	0.025%
Acid Value	0.05	
Saponification Value	0.05	
Iodine Value	380.45	
Peroxide Value	2.53	
Specific Gravity @ 20°C	0.857	
Refractive Index @ 20°C	1.4963	
Purity by GC	99.7%	

Analysis of Squalene Oil Life Source's Squalamine

Purpose: To evaluate the concentration of unsaturated fatty acids.

Equipment: GC-FID
Volumetric flask 50ml

Reagents: Squalene Working Standard
Acetone

Standard Preparation:

Dissolve 0.03 g of squalene in acetone using 50 ml volumetric flask.

Sample Preparation:

Weigh 0.03 g of sample into a 50 ml volumetric flask. Make up to volume with acetone.

<u>GC condition:</u>	Column	SP2330
	Flow Rate	10ml/min
	Oven Temperature	215°C
	Detector Temperature	265°C
	Injection Temperature	245°C
	Carrier Gas	Helium

Life Sources, Inc.
Shark Liver Oil

In Shark Liver Oil approximately 70% of the liver weight is oil. After mechanical graining of the livers, the oil will appear after one day due to natural hydrolyzation by enzymes. The oil/water is separated from the protein by a continuously working sludge decanter and the oil is separated from the water by an oil/water separator.

To obtain squalene from crude shark liver oil, the crude oil is run on a molecular distillation plant at vacuum 10^{-3} . In this process, pure squalene 97-98% is obtained directly from the oil. To purify this oil further, it is stream stripped under low vacuum and then filtered. Laboratory analyses are performed during all different steps in the manufacturing process and operation criterion are adjusted accordingly.

As shown above, squalene is 100% natural, does not contain any hazardous substances and is unadulterated with any other oil and/or foreign matter. In the U.S., squalene is used as a cosmetic, pharmaceutical, and food ingredient and is sold freely over the counter without prescription. It is listed by the Chemical Abstract Service, CAS #111-02-4 and is regulated by the U.S. Food and Drug Administration and U.S. Customs Service.

We certify that this information is true and correct.

Company Profile

Life Sources is a Nevada Corporation with order fulfillment located in Fair Oaks, California and is a member of the NNFA, National Health Federation, and Citrus Heights, California Chamber of Commerce.

The President and Founder is Andrea McCreery, Ph.D. Dr. McCreery is currently developing several new proprietary products to add to the Life Sources anti-aging and chronic illness system.

Based upon clinical observations, Dr. McCreery has developed several innovative products designed to slow the aging process and naturally combat chronic illnesses. Nutritional counseling is effective with ADD/ADHD, fibromyalgia, chronic fatigue syndrome, irritable bowel syndrome, weight loss, arthritis, candidiasis and more.

Life Sources specializes in Vital Hematology as a means of observing cell wall deficient forms in the living blood of clients to recommend nutritional interventions to reverse risk factors for chronic disease and nutritional deficiencies. (If an individual is interested in scheduling a consultation, please e-mail for details and fee schedules to clinic@life-sources.com or call the clinic at 916-536-9930.

The Life Sources clinic is located at 5006 Sunrise Blvd., #101, Fair Oaks, California 95628. Initial client visit includes the observation of living blood (with a videotape of the observation included), blood typing and nutritional counseling for chronic illness and potential risk factors.

Individuals interested in scheduling a seminar or group demonstration of Vital Hematology should address e-mail to info@life-sources.com.

Dr. McCreery is available for demonstrations to groups, health food stores and/or practices wishing to offer nutritional interventions to their clients and practice.

Life Sources is dedicated to quality and quantity of life and the eventual reduction of health care costs in the U.S. Client support is appreciated.