rexresearch.com

Fritz-Albert POPP
Biophotons / Mistletoe vs Cancer

Related :
Biophoton Research Papers
Biophoton Patents

Mistletoe, *Viscum album*

http://www.examiner.com/holistic-health-in-miami/holiday-herb-mistletoe-brings-cancer-cure-as-biophoton-research-shows-herb-s-healing-power
December 31, 2009

Holiday herb mistletoe brings cancer cure as biophoton research shows herb's healing power

by

Jed Shlackman
Miami Holistic Health Examiner

A UK woman has disclosed how she cured her cancer with the holiday herb mistletoe after declining chemotherapy treatment. Joan van Holsteijn obtained injections of a medicine made from mistletoe berries, the plant associated in popular culture with Christmas-time kisses. This treatment has apparently brought Joan a cure to her cancer, as the tumors have disappeared. Joan had been diagnosed with non-Hodgkin's Lymphoma after doctors discovered a tumor the size of an egg in her leg. Within 18 months of initiating the mistletoe treatment the tumor was gone and scans showed no further trace of the cancer. Joan is pleased that she made the decision to refuse chemotherapy due to the debilitating effects of chemotherapy drugs and their role in depleting the immune system, the very system the body needs functioning well to use its own resources for healing cancer.

Joan now keeps springs of mistletoe in her home, not to invite holiday kisses but to invite others to hear about her wonderful experience of recovery from lymphoma using this herbal treatment. This treatment is well-known in Europe, while Americans are unlikely to have heard of it. Even those who are aware of this herbal therapy may not know about some surprising research that explains how mistletoe seems to help the body clear away cancers. This research comes from the work of Dr. Fritz-Albert Popp, who is a pioneer in research on biophotons and their role in cellular communication. Dr. Popp discovered that changes in the body's biophoton emissions are associated with cancer and other illnesses. Biophotons are photons of light emitted in living systems. Popp found that carcinogenic chemicals can be recognized by their property of disrupting biophoton emissions and the coherence of light waves. Based on this, he surmised that there may be compounds which have the opposite effect of helping restore healthy biophoton emissions and resuming coherent light patterns. Of all the alleged cancer-busting substances Popp tested, only mistletoe was able to return the biophoton emissions of cancer cells back to normal. When this happened the cancers went into remission.

In Popp's view, health is a state of perfect subatomic communication, and ill health is a state of communication breakdown. We are ill when our waves are out of synch. Popp believes that our cells and DNA use electromagnetic spectrum waves to communicate and transfer information. Substances that disturb or enhance the transmission of these waves in varying frequency ranges (wavelengths) can influence our health. In cancer patients, Popp found that natural cycles of light emission were disrupted, light waves were losing coherence, and thus the cancer cells were out of attunement to the rest of the body. Scientists have long known that photorepair allows damaged cells to regenerate. This process of light being used to restore life to cells functions best within a certain frequency range. This frequency range falls within the ultraviolet light portion of the electromagnetic spectrum. Not surprisingly, Popp had discovered that known carcinogens (cancer causing chemicals) act to disrupt the transmission of light in that range.

Mistletoe appears to assist cancer patients due to the subtle energetic properties it contains. Vibrational medicine is a key frontier in the healing arts, and this herb is one example of how research in natural therapies and vibrational energy can help us find ways to restore health and bring balance and harmony to our lives. The next time you see a sprig of mistletoe, you may want to ponder this miracle healing herb and its life-giving properties...

http://www.viewzone.com

Are humans really beings of light?

by

Dan Eden
for viewzone.com

I get lots of suggestions for stories, and I really appreciate them. But some of them are too good to be true. An example of this was a story of a giant human skeleton -- maybe 40 feet tall -- that was discovered by a Russian archaeological team. The story had photos and links accompanying it and looked promising. But when the links were researched they went in a circle. Each link used the other link as the source. Finally the elements of the photos turned up and we recognized a good Photoshop job had fooled everyone.

I had this same experience this week when I was sent an article where a Russian (again) scientist, Pjotr Garjajev, had managed to intercept communication from a DNA molecule in the form of ultraviolet photons -- light! What's more, he claimed to have captured this communication from one organism (a frog embryo) with a laser beam and then transmitted it to another organisms DNA (a salamander embryo), causing the latter embryo to develop into a frog!

But this was just the beginning.

Dr. Garjajev claims that this communication is not something that happens only inside the individual cells or between one cell and another. He claims organisms use this "light" to "talk" to other organisms and suggested that this could explain telepathy and ESP. It was like human beings already had their own wireless internet based on our DNA. Wow!

I tried to find a scientific journal that had this experiment. All I could find were blogs and other websites that carried the same story, word for word, without any references. That is until I stumbled on the work of Fritz-Albert Popp [right]. Then everything I had just read seemed very plausible.

Fritz-Albert Popp thought he had discovered a cure for cancer. I'm not convinced that he didn't.

It was 1970, and Popp, a theoretical biophysicist at the University of Marburg in Germany, had been teaching radiology -- the interaction of electromagnetic (EM) radiation on biological systems. Popp was too early to worry about things like cellphones and microwave towers which are now commonly linked with cancers and leukemia. His world was much smaller.

He'd been examining two almost identical molecules: benzo[a]pyrene, a polycyclic hydrocarbon known to be one of the most lethal carcinogens to humans, and its twin (save for a tiny alteration in its molecular makeup), benzo[e]pyrene. He had illuminated both molecules with ultraviolet (UV) light in an attempt to find exactly what made these two almost identical molecules so different.

Why Ultra-violet light?

Popp chose to work specifically with UV light because of the experiments of a Russian biologist named Alexander Gurwitsch who, while working with onions in 1923, discovered that roots could stimulate a neighboring plant's roots if the two adjacent plants were in quartz glass pots but not if they were in silicon glass pots. The only difference being that the silicon filtered UV wavelengths of light while the quartz did not. Gurwitsch theorized that onion roots could communicate with each other by ultraviolet light.

All vibrations of energy are part of the electro-magnetic spectrum. These include electrical energy, heat, sound, light, radio waves and radioactive waves. UV light is merely a small portion of the spectrum of EM energy with a very short wavelength.

What Popp discovered was that benzo[a]pyrene (the cancer producing molecule) absorbed the UV light, then re-emitted it at a completely different frequency -- it was a light "scrambler". The benzo[e]pyrene (harmless to humans), allowed the UV light to pass through it unaltered.

Popp was puzzled by this difference, and continued to experiment with UV light and other compounds. He performed his test on 37 different chemicals, some cancer-causing, some not. After a while, he was able to predict which substances could cause cancer. In every instance, the compounds that were carcinogenic took the UV light, absorbed it and changed or scrambled the frequency.

There was another odd property of these compounds: each of the carcinogens reacted only to light at a specific frequency -- 380 nm (nanometres) in the ultra-violet range. Popp kept wondering why a cancer-causing substance would be a light scrambler. He began reading the scientific literature specifically about human biological reactions, and came across information about a phenomenon called 'photorepair'.

It is well known from biological laboratory experiments that if you blast a cell with UV light so that 99 per cent of the cell, including its DNA, is destroyed, you can almost entirely repair the damage in a single day just by illuminating the cell with the same wavelength at a much weaker intensity. To this day, scientists don't understand this phenomenon, called photorepair, but no one has disputed it.

Popp also knew that patients with xeroderma pigmentosum [right] eventually die of skin cancer because their photorepair system can't repair solar damage. He was also struck by the fact that photorepair works most efficiently at 380 nm -- the same frequency that the cancer-causing compounds react to and scramble.

This was where Popp made his logical leap. If the carcinogens only react to this frequency, it must somehow be linked to photorepair. If so, this would mean that there must be some kind of light in the body responsible for photorepair. A compound must cause cancer because it permanently

blocks this light and scrambles it, so photorepair can't work anymore. It seemed logical, but was it true?

Popp was freaked out by this. He wrote about it in a paper and a prestigious medical journal agreed to publish it.

Not long after that, Popp was approached by a student named Bernhard Ruth, who asked Popp to supervise his work for his doctoral dissertation. Popp told Ruth he was prepared to do so if the student could show that light was emanating from the human body.

This meeting was fortuitous for Popp because Ruth happened to be an excellent experimental physicist. Ruth thought the idea was ridiculous, and immediately set to work building equipment to prove Popp's hypothesis wrong.

Within two years, Ruth had constructed a machine resembling a big X-ray detector which used a photomultiplier to count light, photon by photon. Even today, it is still one of the best pieces of equipment in the field. The machine had to be highly sensitive because it had to measure what Popp assumed would be extremely weak emissions.

In an old documentary film taken in the laboratory at the International Institute of Biophysics, Dr. Popp opens a chamber about the size of a bread box. He places a fresh cutting from a plant and a wooden match in a plastic container inside the dark chamber and closed the light proof door. Immediately he switches on the photomultiplyer and the image shows up on a computer screen. The match stick is black while the green, glowing silhouette of the leaves is clearly visible.

Dr. Popp exclaims, "We now know, today, that man is essentially a being of light."

In 1976, they were ready for their first test with cucumber seedlings. The photomultiplier showed that photons, or light waves, of a surprisingly high intensity were being emitted from the seedlings. In case the light had to do with an effect of photosynthesis, they decided that their next test -- with potatoes -- would be to grow the seedling plants in the dark. This time, when the seedlings were placed in the photomultiplier, they registered an even higher intensity of light. What's more, the photons in the living systems they'd examined were more coherent than anything they'd ever seen.

Popp began thinking about light in nature. Light was present in plants and was used during photosynthesis. When we eat plant foods, he thought, it must be that we take up the photons and store them.

When we consume broccoli, for example, and digest it, it is metabolised into carbon dioxide (CO2) and water, plus the light stored from the sun and photosynthesis. We extract the CO2 and eliminate the water, but the light, an EM wave, must be stored. When taken in by the body, the energy of these photons dissipates and becomes distributed over the entire spectrum of EM frequencies, from the lowest to the highest.

This energy is the driving force for all the molecules in our body. Before any chemical reaction can occur, at least one electron must be activated by a photon with a certain wavelength and enough energy.

The biochemist and Nobel Prize winner Lehninger mentions in his textbook that some reactions in the living cell happen quite a lot faster than what corresponds to 37C temperature. The explanation seems to be that the body purposely directs chemical reactions by means of electromagnetic vibrations (biophotons).

Photons (Light) control everything in the cell

Photons switch on the body's processes like an orchestra conductor bringing each individual instrument into the collective sound. At different frequencies, they perform different functions. Popp found that molecules in the cells responded to certain frequencies, and that a range of vibrations from the photons caused a variety of frequencies in other molecules of the body.

This theory has been supported by Dr. Veljko Veljkovic who now heads the Center for Multidisciplinary Research and Engineering, Institute of Nuclear Sciences Vinca. She dared to ask the question that has forever puzzled cellular biologists: What is it that enabled the tens of thousands of different kinds of molecules in the organism to recognize their specific targets? Living processes depend on selective interactions between particular molecules, and that is true for basic metabolism to the subtlest nuances of emotion. It's like trying to find a friend in a very big very crowded ballroom in the dark.

The conventional picture of a cell even now is that of a bag of molecules dissolved in water. And through bumping into one another by chance -- random collisions -- those molecules that have complementary shapes lock onto to each other so the appropriate biochemical reactions can take place. This 'lock and key' model has been refined to a more flexible (and realistic) 'induced fit' hypothesis that allows each molecule to change shape slightly to fit the other better after they get in touch, but the main idea remains the same.

It is supposed to explain how enzymes can recognize their respective substrates, how antibodies in the immune system can grab onto specific foreign invaders and disarm them. By extension, that's how proteins can 'dock' with different partner proteins, or latch onto specific nucleic acids to control gene expression, or assemble into ribosomes for translating proteins, or other multi-molecular complexes that modify the genetic messages in various ways. But with thousands -- or even hundreds of thousands of reactions happening each second in just one cell this seems pushing the "mechanical" concept a bit too far.

What has been proposed is that somehow each molecule sends out a unique electromagnetic field that can "sense" the field of the complimentary molecule. It's as if there is a "dance" in the cellular medium and the molecules move to the rythm. The music is supplied by the biophoton.

"Veljkovic and Cosic proposed that molecular interactions are electrical in nature, and they take

place over distances that are large compared with the size of molecules. Cosic later introduced the idea of dynamic electromagnetic field interactions, that molecules recognize their particular targets and vice versa by electromagnetic resonance. In other words, the molecules send out specific frequencies of electromagnetic waves which not only enable them to 'see' and 'hear' each other, as both photon and phonon modes exist for electromagnetic waves, but also to influence each other at a distance and become ineluctably drawn to each other if vibrating out of phase (in a complementary way)." -- The Real Bioinformatics Revolution: Proteins and Nucleic Acids Singing to One Another? (Paper available at report@i-sis.org.uk)

"There are about 100,000 chemical reactions happening in every cell each second. The chemical reaction can only happen if the molecule which is reacting is excited by a photon... Once the photon has excited a reaction it returns to the field and is available for more reactions... We are swimming in an ocean of light."

These 'biophoton emission', as Popp called them, provided an ideal communication system for the transfer of information to many cells across the organism. But the single most important question remained: where was the light coming from?

A particularly gifted student talked him into another experiment. It is known that when ethidium bromide is applied to samples of DNA, it insinuates itself in between the base pairs of the double helix, causing DNA to unwind. The student suggested that, after applying the chemical, they measure the light coming from the sample. Popp found that the greater the concentration of ethidium, the more the DNA unravelled, but also the stronger the intensity of light. Conversely, the less he used, the less light was emitted.

He also found that DNA could send out a wide range of frequencies, some of which seemed to be linked to certain functions. If DNA stored this light, it would naturally emit more light on being unzipped.

These and other studies proved to Popp that one of the most essential sources of light and biophoton emissions was DNA. DNA was like the master tuning fork of the body. It would strike a particular frequency and certain molecules would follow. It was also possible, he realised, that he had stumbled upon the missing link in current DNA theory that could account for perhaps the greatest miracle of all in human biology -- how a single cell can turn into a fully formed human being.

How cells "talk" to each other

When you get a cut or scratch on your skin, the cells that are injured somehow signal the surrounding healthy cells to begin reproducing copies of themselves to fill in and mend the opening. When the skin is back to normal, a signal is sent to the cells to tell them to stop reproducing. Scientists have wondered exactly how this works.

With biophoton emissions, Popp believed he had an answer to this question. This phenomenon of coordination and communication could only occur in a holistic system with one central orchestrator. Popp showed in his experiments that these weak light emissions were sufficient to orchestrate the body's repairs. The emissions had to be low intensity because these communications took place on a very small, intracellular, quantum level. Higher intensities would have an effect only in the world of the large and would create too much "noise" to be effective.

The number of photons emitted seemed to be linked to the organism's position on the evolutionary scale -- the more complex the organism, the fewer photons were emitted. Rudimentary animals and plants tended to emit 100 photons/cm2/sec at a wavelength of 200-800 nm, corresponding to a very-high-frequency EM wave well within the visible range, whereas humans emit only 10 photons/cm2/sec at the same frequency.

In one series of studies, Popp had one of his assistants -- a 27-year-old healthy young woman -- sit in the room every day for nine months while he took photon readings of a small area of her hand and forehead. Popp then analysed the data and discovered, to his surprise, that the light emissions followed certain set patterns -- biological rhythms at 7, 14, 32, 80 and 270 days -- and similarities were also noted by day or night, by week and by month, as though the body were following the world's biorhythms as well as its own.

Cancer is a loss of coherent light

So far, Popp had studied only healthy individuals and found an exquisite coherence at the quantum level. But what kind of light is present in those who are ill?

Popp tried out his machine on a series of cancer patients. In every instance, these patients had lost those natural periodic rhythms as well as their coherence. The lines of internal communication were scrambled. They had lost their connection with the world. In effect, their light was going out.

Just the opposite is seen with multiple sclerosis: MS is a state of too much order. Patients with this disease are taking in too much light, thereby inhibiting their cells' ability to do their job. Too much cooperative harmony prevented flexibility and individuality -- like too many soldiers marching in step as they cross a bridge, causing it to collapse. Perfect coherence is an optimal state between chaos and order. With too much cooperation, it is as though individual members of the orchestra are no longer able to improvise. In effect, MS patients are drowning in light.

Popp also examined the effects of stress. In a stressed state, the rate of biophoton emissions goes up -- a defence mechanism designed to restore the patient's equilibrium.

Popp now recognized that what he'd been experimenting with was even more than a cure for cancer or Gestaltbildung. Here was a model which provided a better explanation than the current neo-Darwinist theory for how all living things evolve on the planet. Rather than a system of fortunate but ultimately random error, if DNA uses frequencies of every variety as an information tool, this suggests instead a feedback system of perfect communication through waves that encode and transfer information.

"Good vibes" means coherent light

Popp came to realize that light in the body might even hold the key to health and illness. In one experiment, he compared the light from free-range hens' eggs with that from penned-in, caged hens. The photons in the former were far more coherent than those in the latter.

Popp went on to use biophoton emissions as a tool for measuring the quality of food. The healthiest food had the lowest and most coherent intensity of light. Any disturbance in the system increased the production of photons. Health was a state of perfect subatomic communication, and ill health was a state of communication breakdown. We are ill when our waves are out of synch.

Bio Photon emission detection is currently used commercially in the food industry. Agricultural science is looking at Bio-photon emissions to determine plant health for the purposes of food quality control. Biophotonen is a company working for development and practical applications of biophotonics. The work is based on a variety of patents. "Biophotonen" solves practical problems of food industry, environmental industry, cosmetics, etc.

Off-shoots of Dr. Popp's discovery
In the 1970s Dr. Veljko Veljkovic, who now heads the Center for Multidisciplinary Research and Engineering, Institute of Nuclear Sciences Vinca, also discovered a method for predicting which of the hundreds of new chemicals made by the rapidly expanding chemical industry were carcinogenic, by calculating certain electronic, biophotonic properties of the molecules. This method was soon found equally applicable to predicting organic chemicals that were mutagenic, or toxic, and even those that were antibiotic, or cytostatic (anticancer). Veljkovic's institute in Belgrade has since teamed up with other European laboratories to apply the same method to drug discovery, especially against AIDS disease.

Biophoton Therapy

Biophoton therapy is the application of light to particular areas of the skin for healing purposes. The light, or photons, that are emitted by these units are absorbed by the skin's photoreceptors and then travel through the body's nervous system to the brain, where they help regulate what is referred to as our human bio-energy. By stimulating certain areas of the body with specific quantities of light, biophoton therapy can help reduce pain as well as aid in various healing processes throughout the body.

The theory behind biophoton therapy is based on the work of Dr. Franz Morell and has been expanded by the work of Doctors L.C. Vincent and F.A. Popp, who theorized that light can affect the electromagnetic oscillation, or waves of the body and regulate enzyme activity.

It took some 25 years for Popp to gather converts from among the scientific community. Slowly, a few select scientists around the globe began to consider that the body's communication system might be a complex network of resonance and frequency. Eventually, they would form the International Institute of Biophysics, composed of 15 groups of scientists from international centres around the world.

Popp and his new colleagues went on to study the light emissions from several organisms of the same species, first in an experiment with a type of water flea of the genus Daphnia. What they found was nothing short of astonishing. Tests with a photomultiplier showed that the water fleas were sucking up the light emitted from each other. Popp tried the same experiment on small fish and got the same result. According to his photomultiplier, sunflowers were like biological vacuum cleaners, moving in the direction of the most solar photons to hoover them up. Even bacteria swallowed photons from the media they were put in.

Communication between organisms

Thus, it dawned on Popp that these emissions had a purpose outside of the body. Wave resonance wasn't only being used to communicate inside the body, but between living things as well. Two healthy beings engaged in 'photon sucking', as he called it, by exchanging photons. Popp realised that this exchange might unlock the secret of some of the animal kingdom's most persistent conundrums: how schools of fish or flocks of birds create perfect and instantaneous coordination. Many experiments on the homing ability of animals demonstrate that it has nothing to do with following habitual trails, scents or even the EM fields of the earth, but rather some form of silent communication that acts like an invisible rubber band, even when the animals are separated by miles of distance.

For humans, there was another possibility. If we could take in the photons of other living things, we might also be able to use the information from them to correct our own light if it went awry.

Death Transmission via the Paranormal "Light" Channel

Some extremely interesting experiments were performed by V.P. Kaznacheyev et al regarding the paranormal transmission of death by light inter-organism communication.

Briefly, two groups of cells were selected from the same cell culture and one sample placed on each side of a window joining two environmentally shielded rooms. The cell cultures were in quartz containers. One cell culture was used as the initiation sample and was subjected to a deadly mechanism - virus, germ, chemical poison, irradiation, ultraviolet rays, etc. The second cell culture was observed, to ascertain any transmitted effects from the culture sample being killed.

When the window was made of ordinary glass, the second sample remained alive and healthy. When the window was made of quartz, the second sample sickened and died with the same symptoms as the primary sample.

The experiments were done in darkness, and over 5,000 were reported by Kaznacheyev and his colleagues. The onset of induced complementary sickness and death in the second culture followed a reasonable time -- say two to four hours -- behind sickness and death in the primary culture.

The major transmission difference between window glass and quartz is that quartz transmits both ultraviolet and infrared well, while glass is relatively opaque to ultraviolet and infrared. Both quartz and glass transmit visible light. Thus glass is a suppressor of the paranormal channel, while quartz is not.

In 1950, Western researchers found that cells could be killed in darkness with ultraviolet radiation, kept shielded from visible light for twenty-four hours or longer, and then if radiated with visible light the cells would start reviving by hundreds of thousands even though they had been clinically dead.

Specifically, every cell emits mitogenetic radiation in the ultraviolet range twice: when it is born and when it dies. The UV photon emitted at death contains the exact virtual state pattern of the condition of the cell at death. The healthy cells are bombarded with death messages from those that are dying, and this diffuses the death pattern throughout the healthy culture, eventually kindling into the same death pattern there.

[V.P. Kaznacheyev et al, "Distant Intercellular Interactions in a System of Two Tissue Cultures," Psychoenergetic Systems, Vol. 1, No. 3, March 1976, pp 141-142.]

Popp had begun experimenting with such an idea. If cancer-causing chemicals could alter the body's biophoton emissions, then it might be that other substances could reintroduce better communication. Popp wondered whether certain plant extracts could change the character of the biophoton emissions from cancer cells to make them communicate again with the rest of the body. He began experimenting with a number of non-toxic substances purported to be successful in treating cancer. In all but one instance, these substances only increased the photons from tumour cells, making them even more deadly to the body.

The single success story was mistletoe, which appeared to help the body to 'resocialise' the photon emissions of tumour cells back to normal. In one of numerous cases, Popp came across a woman in her thirties who had breast and vaginal cancer. Popp found a mistletoe remedy that created coherence in her cancer tissue samples. With the agreement of her doctor, the woman stopped any treatment other than the mistletoe extract and, after a year, all her laboratory tests were virtually back to normal.

To Popp, homoeopathy was another example of photon sucking. He had begun to think of it as a 'resonance absorber'. Homoeopathy rests upon the notion that like is treated with like. A plant extract that at full strength can cause hives in the body is used in an extremely diluted form to get rid of it. If a rogue frequency in the body can produce certain symptoms, it follows that a high dilution of a substance which can produce the same symptoms would also carry that frequency. Like a resonating tuning fork, a suitable homoeopathic solution might attract and then absorb the abnormal oscillations, allowing the body to return to normal health.

Popp thought that electro-magnetic molecular signalling might even explain acupuncture. According to Traditional Chinese Medicine, the human body has a system of meridians, running deep in the tissues, through which flows an invisible energy the Chinese call ch'i, or the life force. The ch'i supposedly enters the body through these acupuncture points and flows to deeper organ structures (which do not correspond to those in Western biology), providing energy (or the life force). Illness occurs when this energy is blocked at any point along the pathways. According to Popp, the meridian system transmits specific energy waves to specific zones of the body.

Research has shown that many of the acupuncture points have a dramatically reduced electrical resistance compared with the surrounding skin (10 kilo-ohms and 3 mega-ohms, respectively). Orthopaedic surgeon Dr Robert Becker, who has done a great deal of research on EM fields in the body, designed a special electrode recording device that rolls along the body like a pizza cutter. His many studies have shown electrical charges on every one of the people tested corresponding to the Chinese meridian points.

[Extracted from The Field: The Quest for the Secret Force of the Universe, by Lynne McTaggart]

Light in human consciousness

I mention this latest work for those who may wish to explore the boundaries of photon research and theory. In a ground-breaking paper with the lengthy title of "Orchestrated Objective Reduction of Quantum Coherence in Brain Microtubules: The 'Orch OR' Model for Consciousness" by Stuart Hameroff and Roger Penrose, the brain is described as a quantum computer whose main architecture are the cytoskeletal microtubules and other structures within each of the brain's neurons.

If you examine a neuron, you will see that there are many hollow tubes surrounding the axon. These microtubules have been thought of as a kind of scaffold to support the nerve fiber. But they are now getting a second look as the possible architecture of our consciousness.

The particular characteristics of microtubules that make them suitable for quantum effects include their crystal-like lattice structure, hollow inner core, organization of cell function and capacity for information processing. According to the researchers, their size appears perfectly designed to transmit photons in the UV range.

[Above:] Schematic of central region of neuron (distal axon and dendrites not shown), showing parallel arrayed microtubules interconnected by MAPs. Microtubules in axons are lengthy and continuous, whereas in dendrites they are interrupted and of mixed polarity. Linking proteins connect microtubules to membrane proteins including receptors on dendritic spines.

"Traditionally viewed as the cell's 'bone-like' scaffolding, microtubules and other cytoskeletal structures now appear to fill communicative and information processing roles. Theoretical models suggest how conformational states of tubulins within microtubule lattices can interact with neighboring tubulins to represent, propagate and process information as in molecular-level 'cellular automata' computing systems." -- Hameroff and Watt, 1982; Rasmussen et al, 1990; Hameroff et al, 1992

In their paper, Hameroff and Penrose present a model linking microtubules to consciousness using quantum theory. In their model, quantum coherence emerges, and is isolated in brain microtubules until a threshold related to quantum gravity is reached. The resultant self-collapse creates an instantaneous "now" event. Sequences of such events create a flow of time, and consciousness.

Don't worry if you can't understand this. It's heavy reading but it does show that the existence of internal photons -- inner light -- is very real and is the basis of virtually all human cellular and systemic function.

Could the Russian scientists really have changed a salamander embryo into a frog with lasers? I prefer to wait until the actual details of the experiment are published and reviewed -- but I am much less apt to dismiss this as fiction now that I know about our inner lights.

---

http://books.google.com/books?id=VtNaz_vSnIIC&pg=PA54&lpg=PA54&dq=Popp+mistletoe&source=bl&ots=yeswwqdMFm&sig=shfjLuUwPf9A5m3rMLhcQaAHnEI&hl=en&ei=8cXXTq-iCsmKsQKnvYH0DQ&sa=X&oi=book_result&ct=result&resnum=3&sqi=2&ved=0CDYQ6AEwAg#v=onepage&q=Popp%20mistletoe&f=false

The Field: The Quest for the Secret Force of the Universe

By

Lynne McTaggart

---

http://naturalnews.com
http://www.naturalpedia.com/mistletoe.html

MISTLETOE

VISCUM, JUNIPER mistletoe (PHOR-ADENDRON JUNIPERINUM)

This particular mistletoe may or may not be poisonous, but too little is known about it for any wise person to use it for anything but holding up at Christmas time and kissing beneath. MISTLETOE, VISCUM, EUROPEAN mistletoe (VISCUM ALBUM) This branch of mistletoe definitely contains toxic amines and is considered poisonous. MORNING GLORY (IPOMOEA PURPUREA) The seeds of this particular morning glory do contain amides of lysergic acid, but with a potency much less than that of LSD." - Earl Mindell, *Earl Mindell's Vitamin Bible for the 21st Century*

"The single success story was mistletoe, which seemed to help the body to 'resocialize' the photon emission of tumor cells back to normal. In one of numerous cases, Popp came across a woman in her thirties with breast and vaginal cancer. Popp tried mistletoe and other plant extracts on samples of her cancerous tissue and found that one particular mistletoe remedy created coherence in the tissue similar to that of the body. With the agreement of her doctor, the woman began forgoing any treatment other than this mistletoe extract." - Lynne Mctaggart, *The Field - The Quest for the Secret Force of the Universe*

"Popp tried mistletoe and other plant extracts on samples of her cancerous tissue and found that one particular mistletoe remedy created coherence in the tissue similar to that of the body. With the agreement of her doctor, the woman began forgoing any treatment other than this mistletoe extract. After a year, all her laboratory tests were virtually back to normal. A woman who was given up as a terminal cancer case had her proper light restored, just by taking a herb.2? To Fritz-Albert Popp, homeopathy was another example of photon sucking. He had begun to think of it as a 'resonance absorber'." --- Lynne Mctaggart, *The Field - The Quest for the Secret Force of the Universe*

"Iscador P contains mistletoe extract from V. pini (mistletoe from pine trees). • Iscador Qu contains mistletoe extract from V. quercus (mistletoe from oak trees). The three types are also available formulated with low concentrations (10~8 g per 100 mg fresh plant extract) of certain metal salts, such as those of copper and mercury. A lectin-standardized extract, also prepared according to the anthroposophic approach, is available, although this formulation does not include metal salts." --- Dr. Michael Heinrich, Joanne Barnes, Simon Gibbons and Elizabeth M. Williamson, *Fundamentals of Pharmacognosy and Phytotherapy*

"A recent study shows that mistletoe can induce a condition known as eosinophilic (an increase in the number of eosinophils, a type of white blood cell) in healthy adults. [Journal Society Integrative Oncology 4: 3-7, 2006] mistletoe extract has been shown to reduce adverse effects of radiotherapy and chemotherapy on the microcirculation and the immune system of cancer patients. [Anticancer Research 25:601-10, 2005] Iscador is popular in Germany where it was recently shown to improve survival (slightly) among malignant melanoma patients. --- Bill Sardi, *You Don't Have to be Afraid of Cancer Anymore*

"Disch Med Wochenschr 125: 1222-26, 2000] A study of patients who had undergone bladder cancer surgery did not find that mistletoe extract significantly delayed recurrence of cancer. [Journal Urology 168: 72-75, 2002] In 2002, a German medical journal reported that mistletoe therapy has not gained an established placed in the treatment of cancer and no overall improvement in survival had been reported."

"Alternative Therapy Health Medicine 7: 57-66, 68-72, 2001] For comparison, some widely promoted anticancer drugs like Erbitux only extend life by an average of four months and cost $48,000. A survey of German physicians found that the probability to achieve complete or partial remissions with mistletoe extract was estimated to be 6% and 15% respectively. [Disch Med Wochenschr 125: 1222-26, 2000] A study of patients who had undergone bladder cancer surgery did not find that mistletoe extract significantly delayed recurrence of cancer." --- Bill Sardi, *You Don't Have to be Afraid of Cancer Anymore*

"With the agreement of her doctor, the woman began forgoing any treatment other than this mistletoe extract. After a year, all her laboratory tests were virtually back to normal. A woman who was given up as a terminal cancer case had her proper light restored, just by taking a herb.2? To Fritz-Albert Popp, homeopathy was another example of photon sucking. He had begun to think of it as a 'resonance absorber'. Homeopathy rests upon the notion that like is treated with like. A plant extract that at full strength can cause hives in the body is used in an extremely dilute form to cure them." --- Lynne Mctaggart, *The Field - The Quest for the Secret Force of the Universe*

"The host trees are usually at least twenty years old before mistletoe encroaches, and they are not usually killed by the mistletoe. The plant forms pendant bushes where it grows. Its leaves are thick, oval to round, and 1 to 2 inches long. Its small, inconspicuous, sticky, white flowers are about V4 inch long. It is dioecious, meaning that male and female flowers are borne on different plants." --- Brigitte Mars, A.H.G., The Desktop Guide to Herbal Medicine: The Ultimate Multidisciplinary Reference to the Amazing Realm of Healing Plants, in a Quick-study, One-stop Guide

"Indeed, Frazer concludes that the Golden Bough itself was probably a sprig of berries still used ceremonially today: mistletoe..." - Adam Leith Gollne, *The Fruit Hunters: A Story of Nature, Adventure, Commerce and Obsession*

"Lectin-standardized mistletoe extracts, which are distinct from anthroposophical mistletoe preparations, are also available, particularly in Germany. mistletoe products prepared from different host trees are prescribed for patients with different types of cancer. Treatment is usually given by subcutaneous injection, although the intravenous injection route is sometimes used, and oral formulations are also available. In the preparation of anthroposophical medicines, particular attention is paid to the source and methods of farming used in growing plant raw materials." --- Dr. Michael Heinrich, Joanne Barnes, Simon Gibbons and Elizabeth M. Williamson, *Fundamentals of Pharmacognosy and Phytotherapy*

"In folk medicine, mistletoe is also used for attacks of dizziness, amenorrhea, and joint diseases. Side effects: Refer to the German Commission E monograph excerpt; with long-term administration, allergic reactions may occur. Making the tea: Pour cold water over 2.5 g finely cut dried herb. Allow to stand at room temperature for 10— 12 hours and then strain. Drink 1— 2 cups daily (see also: Indications). 1 teaspoon = about 2.5 g. Tea preparations: mistletoe herb is offered as a single herb tea in loose pack and in filter tea bags and is a component of cardiac/circulation herbal tea formulas." --- Josef A. Brinckmann and Michael P. Lindenmaier, *Herbal Drugs and Phytopharmaceuticals: A Handbook for Practice on a Scientific Basis*

"MISTLETOE • Viscum album (European mistletoe); Phoradendron flavescens (American mistletoe). A parasitical plant with a root firmly attached to the wood of the tree on which it grows, it was sacred to the Druids and reputedly used by them to cure sterility and epilepsy; and as an antidote for poisons. Hippocrates and Galen used it as an external remedy and internally to treat sleep disorders. It is also used in "organic" cosmetics. See also Juniper Berry. MITRACARPUS SCABER • A South American vine. MIXED CRESOLS • A preservative. See Cresols. MIXED IONONES • Fragrance ingredients." --- Ruth Winter, M.S., A Consumer's Dictionary of Cosmetic Ingredients

"Medicinal species containing lectins include Phytolacca decandra, Viscum album, Urtica dioica and Juglans nigra (Lewis and Elvin-Lewis 1977). mistletoe (Viscum album) contains lectins, viscotoxins (low-molecular-weight polypeptides), amines, polysaccharides, alkaloids, flavonoids, triterpenes, sterols, fatty acids and phenyl-propanoids. mistletoe lectins have been found to bind to erythrocytes, lymphocytes, leucocytes, macrophages, glycoproteins and plasma proteins." --- Andrew Pengelly, *The Constituents of Medicinal Plants: An Introduction to the Chemistry and Therapeutics of Herbal Medicine*

"Rudolph Steiner, PhD popularized the use of mistletoe in the early 20th century. A certain lectin in mistletoe has been found to inhibit the growth of proliferating cells. By the 1980s, about 40,000 patients worldwide were receiving Iscador, a fermented form of mistletoe that is injected. Iscador and its variations are licensed in Germany as drugs. -Stanislaw R. Burzynski, MD, PhD theorized that certain anti-neoplastons, or naturally occurring peptides, could inhibit the growth of tumor cells without interrupting normal cell growth." --- Patrick Quillin, PhD,RD,CNS, *Beating Cancer with Nutrition*

"Mistletoe In a Phase I/II study, the effect of mistletoe (Eurixor) treatment was evaluated in 16 patients with pancreatic cancer. mistletoe was administered twice a week by subcutaneous injection. Apart from one anaphylactic reaction, which necessitated suspension of treatment for a few days, no severe side effects were observed. Eight patients (50%) showed a CT-verified status of "no change" (according to the World Health Organization criteria) for at least 8 weeks. Median survival time in all patients was 5.6 months (range = 1.5-26.5 months). --- The Life Extension Editorial Staff, *Disease Prevention and Treatment*

"All except two patients claimed that mistletoe had a positive effect on their quality of life, with an obvious decline only during the last weeks of life. These results indicate that mistletoe can stabilize quality of life and therefore may help patients to maintain adequate life quality in their few remaining months (Friess et al. 1996). Another, more recent paper described a patient with inoperable cancer of the pancreas who developed marked eosinophilia during treatment (on day 22) with injections of Viscum album (mistletoe)." --- The Life Extension Editorial Staff, *Disease Prevention and Treatmen*t

"Mistletoe In a Phase I/II study, the effect of mistletoe (Eurixor) treatment was evaluated in 16 patients with pancreatic cancer. mistletoe was administered twice a week by subcutaneous injection. Apart from one anaphylactic reaction, which necessitated suspension of treatment for a few days, no severe side effects were observed. Eight patients (50%) showed a CT-verified status of "no change" (according to the World Health Organization criteria) for at least 8 weeks. Median survival time in all patients was 5.6 months (range = 1.5-26.5 months)." --- The Life Extension Editorial Staff, *Disease Prevention and Treatment*

"Scientists found that cultures of human cells produced more antitumor hormones when they were treated with a mistletoe protein. Since then, some clinics have adopted Iscador for treatment of

cancer. A few warnings are in order for the herbal enthusiast eager to experiment. Steiner's extract is made from European mistletoe plants. mistletoe berries are poisonous, so never eat them. The stems and leaves must be processed before they are used as medicine, and the finished product raises one's blood pressure and pulse. Those with heart problems should not use it." --- William L. Fischer, *How to Fight Cancer & Win*

"The mistletoe most widely sold in America is Phoradendron flavescens, but it is the true mistletoe of Europe that holds the best medicinal properties and should be used. Dead Men DO Tell Tales "What I'm about to share with you is worthy of an investigation by the great Sherlock Holmes himself. mistletoe has been used since the time of Christ for alleviating the symptoms of hypertension. But the evidence doesn't come from ancient Celtic inscriptions painted on a broken pottery shard or stiff piece of leather; instead it comes from the stomach of a very waterlogged and mummified ancient Briton." --- John Heinerman, *Heinerman's Encyclopedia of Healing Herbs and Spices*

"History & Folklore In Norse mythology, a mistletoe bough was used to slay Balder, the god of peace. The plant was subsequently entrusted to the goddess of love, and kissing under it became obligatory. Medicinal Actions & Uses European mistletoe is chiefly used to lower blood pressure and heart rate, ease anxiety, and promote sleep. In low doses it also relieves panic attacks, headaches, and improves concentration. European mistletoe is also prescribed for tinnitus and epilepsy. In anthroposophical medicine, extracts of the berries are injected to treat cancer." --- Andrew Chevallier, The Encyclopedia of Medicinal Plants

"Mistletoe [Viscum album) Popular throughout Europe, mistletoe is one of the most widely used plants for hypertension and in the treatment of cancer. It is the main therapy used to treat cancer by anthroposophical physicians. Iscador, a fermented extract of Viscum album, reduces the leukocytopenia produced by radiation and chemotherapy. mistletoe is tumor-inhibiting and cytotoxic to a number of different tumor types. It also increases natural killer-cells. Viscum's cytotoxic components include viscumin and viscotoxins. Viscumin is a lectin component that causes agglutination of tumor cells." --- Donald R. Yance, j r.,C.N., M.H., A.H.G., with Arlene Valentine, *Herbal Medicine, Healing and Cancer: A Comprehensive Program for Prevention and Treatment*

"European herbalists have a couple of different ways of using mistletoe as a heart sedative and antihypertensive. One way is to take equal parts (about two tablespoons each) of mistletoe and hawthorn berries and lemon balm leaves and steep them in two pints of boiling water for 25 minutes. One-half cup of the warm tea is taken morning and evening. The other way is to soak 4 teaspoons of chopped mistletoe in 1-1/4 pints of cold water overnight, and take one cup of the cool beverage first thing the next morning." --- John Heinerman, *Heinerman's Encyclopedia of Healing Herbs and Spices*

"Recent studies on the anticancer activities of mistletoe (Viscum album) and its alkaloids. Oncology; 43(suppl l):42-50. 1986 Konopa J, Woynarowski JM, Lewandowska-Gumieniak M. Isolation of viscotoxins. Cytotoxic basic polypeptides from Viscum album L. Hoppe-Seylers Z Physiol Chem; 361(10): 1525-1533. 1980 Kovacs E, Hajto T & Hostanska K. Improvement of DNA repair in lymphocytes of breast cancer patients treated with Viscum album extract (Iscador): Eur J Cancer; 27(1):1672-1676. 1991 Metzner G, Franz H, Kindt A, et al." --- Thomson Healthcare, Inc., *PDR for Herbal Medicines, Fourth Edition*

"Effects of a standardized mistletoe preparation on metastatic B16 melanoma colonization in murine lungs. Drug Res; 48:497-502. 1998 Woynarowski J & Konopa J. Interaction between DNA and viscotoxins. Hoppe-Seyler's Z Physiol Chem; 361(10): 1535-1545. 1980 Zarkovic N, Kalisnik T, Loncaric I et al: Comparison of the effects of Viscum album lectin ML-1 and fresh plant extract (Isorel) on cell growth in vitro and tumorigenicity of melanoma B16F10. Cancer Biother Radiopharmacol; 13:121 -131." --- Thomson Healthcare, Inc., *PDR for Herbal Medicines, Fourth Edition*

"Action of viscumin, a toxic lectin from mistletoe, on cells in culture. J Biol Chem. Nov 25;257(22): 13271-7. 1982 Timoshenko AV et al. Influence of the galactoside-specific lectin from Viscum album and its subunits on cell aggregation and selected intracellular parameters of rat thymocytes. In: PM; 61(2):130-133. 1995 Timoshenko AV & Gabius HJ. Efficient induction of superoxide release from human neutrophils by the galactoside-specific lectin from Viscum album. Biol Chem; 374:237-243. 1993 Wagner H. Die Mistel in der Tumortherapie. In: DAZ; 132(20):1087/1088." --- Thomson Healthcare, Inc., *PDR for Herbal Medicines, Fourth Edition*

"It served as a urinary aid and was used in the treatment of epilepsy, in combination with mistletoe and peony. At the end of the 19th century, the drug was applied as an ointment for rheumatism. The infusion is used as a remedy for worm infestation, to treat stomach disorders and cramps and to promote menstruation. In Greece, it is used as a tonic and stimulant. precautions and adverse reactions BURNING BUSH ROOT AND HERB Health risks or side effects following the proper administration of designated therapeutic dosages are not recorded." --- Thomson Healthcare, Inc., *PDR for Herbal Medicines, Fourth Edition*

"MISTLETOE • Viscum album (European mistletoe); Phoradendron flavescens (American mistletoe). A parasitical plant with a root firmly attached to the wood of the tree on which it grows, it was sacred to the Druids and reputedly used by them to cure sterility and epilepsy; and as an antidote for poisons. Hippocrates and Galen used it as an external remedy and internally to treat sleep disorders. It is also used in "organic" cosmetics. See also Juniper Berry.

"Tieghem (Loranthaceae)—mistletoe This Australian plant, which is similar to the true mistletoe (Viscum album L.; Loranthaceae), is a parasite on several plants, including Duboisia myoporoides (see Duboisia spp.). The leaves contain scopolamine and are smoked in Australia as an inebriant (Bock 1994, 85*). It is possible that the scopolamine is extracted from the host tree Duboisia myoporoides as a result of the mistletoe's parasitic activity and is then incorporated into the plant's own tissue. Bernoullia flammea Oliver in Hook." --- Christian Ratsch, *The Encyclopedia of Psychoactive Plants: Ethnopharmacology and Its Applications*

"In vitro effects of mistletoe extracts and mistletoe lectins. Arzneimittel-Forschung 1993; 43:1221-

27. 95. Bussing A Suzart K et al. Induction of apoptosis in human lymphocytes treated with Viscum album L. is mediated by the mistletoe lectins. Cancer Letters 1996; 99:59-72. 96. Mochizuki, et al. Inhibitory effect of tumor metastasis in mice by saponins, ginsenoside-Rb2, 20(R)- and 20(S)-ginsenoside-Rg3, of red ginseng. Biological if Pharmaceutical Bulletin 1995 Sept; 18(9)4197-202. 97. Block G, Patterson B, Subar A." --- David Hoffman, FNIMH, AHG, *Medical Herbalism: The Science Principles and Practices Of Herbal Medicine*

"Mistletoe (Viscum album) contains lectins, viscotoxins (low-molecular-weight polypeptides), amines, polysaccharides, alkaloids, flavonoids, triterpenes, sterols, fatty acids and phenyl-propanoids. mistletoe lectins have been found to bind to erythrocytes, lymphocytes, leucocytes, macrophages, glycoproteins and plasma proteins. Cytotoxic activity has been demonstrated for the glycoprotein fraction, alkaloid fraction and Iscador™ (plant juice preparation)—positive in vitro and in vivo. Human studies with Iscador™ have shown slight improvement over controls, with best results for colon cancer." --- Andrew Pengelly, *The Constituents of Medicinal Plants: An Introduction to the Chemistry and Therapeutics of Herbal Medicine*

"Injectable mistletoe should only be used under the supervision of a qualified healthcare professional. Turmeric (page 753) may be another useful herb with immune effects in people infected with HIV. One preliminary trial found that curcumin, the main active compound in turmeric, helped improve CD4+ cell counts.92 The amount used in this study was 1 gram three times per day by mouth. These results differed from those found in a second preliminary trial using 4.8 or 2.7 grams of curcumin daily. In that study, there was no apparent effect of curcumin on HIV replication rates." --- Alan R. Gaby, M.D., Jonathan V. Wright, M.D., Forrest Batz, Pharm.D. Rick Chester, RPh., N.D., DipLAc. George Constantine, R.Ph., Ph.D. Linnea D. Thompson, Pharm.D., N.D., *The Natural Pharmacy: Complete A-Z Reference to Natural Treatments for Common Health Conditions*

"European mistletoe was the "golden" bough that saved the legendary Aeneas from the underworld. Habitat & Cultivation Native to Europe and northern Asia, European mistletoe grows on host trees, especially apple trees. It is harvested in autumn. parts Used Leaves, branches, berries. Constituents European mistletoe contains glycoproteins, polypeptides (viscotoxins), flavonoids, caffeic and other acids, lignans, acetylcholine, and, in the berries, polysaccharides. Viscotoxins inhibit tumors and stimulate immune resistance." --- Andrew Chevallier, *The Encyclopedia of Medicinal Plants*

"European mistletoe was the "golden" bough that saved the legendary Aeneas from the underworld. Habitat & Cultivation Native to Europe and northern Asia, European mistletoe grows on host trees, especially apple trees. It is harvested in autumn. parts Used Leaves, branches, berries. Constituents European mistletoe contains glycoproteins, polypeptides (viscotoxins), flavonoids, caffeic and other acids, lignans, acetylcholine, and, in the berries, polysaccharides. Viscotoxins inhibit tumors and stimulate immune resistance." --- Andrew Chevallier, *The Encyclopedia of Medicinal Plants*

"Kleijnen J, Knopschild P, (1994) mistletoe treatment for cancer. Review of controlled trials in humans. Phytomedicine 1:255-260. Kwaja TA et al, (1980) Experientia 36:599. Loew, B, In: Loew D, Rietbrock N: Phytopharmaka II: Forschung und klinische Anwendung, Steinkopff Verlag, Darmstadt, 1996. Luther P et al., (1980) Int J Biochem 11:429. Miiller J, (1962) Ger Offen DE 1:130:112. Olsnes S et al,, (1982) J Biol Chem 257:1371. Rentea R et al., (1981) Lab Invest. 44(1):43." --- Joerg Gruenwald, Ph.D., *PDR for Herbal Medicines*

"The stem of mistletoe is used for its calming effect; in the treatment of mental and physical exhaustion; as a tranquilizer against nervous conditions such as agitation, anxiety and increased excitability. visci albi herba ¦ Rheumatism ¦ Tumor therapy adjuvant For treating degenerative inflammation of the joints by stimulating cuti-visceral reflexes following local inflammation brought about by intradermal injections. Also used as a palliative therapy for malignant tumors through non-specific stimulation." --- Joerg Gruenwald, Ph.D., *PDR for Herbal Medicines*

"Schwarz T et al, Stimulation by a stable, standardised mistletoe preparation of cytokine production in an in vitro human skin bioassay. In: PM 62, Abstracts of the 44th Ann Congress of GA, 1996. Stirpe F et al, (1982) J Biol Chem 257(22): 13271. Timoshenko AV et al, Influence of the galactoside-specific lectin from Viscum album and its subunits on cell aggregation and selected intracellular parameters of rat thymocytes. In: PM 61(2):130-133. 1995. Uhlenbrock S, Weihnachten, Miraculix und die Anthroposophie. In: PZ 140(51/52):4602-4603. 1995. Wagner H et al, (1986) Planta Med (2): 102." --- Joerg Gruenwald, Ph.D., PDR for Herbal Medicines

"I was impressed to leam that the Maoris were aware of the mistletoe's medical properties. mistletoe ?Viscum album ?was widely used by the Maoris for the prevention of illness and disease and nowadays it once again holds an important place in herbal medicine. Since the rediscovery of this plant it has been used as an excellent remedy for balancing blood pressure, to treat migraines and epilepsy, and is also used by cancer patients." --- Jan De Vries, *Life Without Arthritis: The Maori Way*

"Three subspecies of parasitic mistletoe ?one parasitic on broad-leaved trees and two on coniferous trees ?are native to Europe. Common mistletoe is the one that interests us most. The leafy tips of young twigs without the thick basal stems and without the berries are the parts used medicinally. These are collected only in the wild and therefore include, albeit in small quantities, also mistletoe subspecies parasitic on coniferous trees ?subsp. abietis and subsp. austriacum." --- Frantisek Stary, The *Natural Guide to Medicinal Plants and Herbs*

"Local reactions can occur with parenteral administration of mistletoe extracts (wheal formation, possibly also necroses), chills, fever, headache, anginal complaints, orthostatic circulatory disorders and allergic reactions. The wheal formation and the elevation of body temperature are considered signs of immune system stimulation and therefore as positive therapeutic effects. DOSAGE visci albi herba Mode of Administration: Fresh plant, cut and powdered herb for the preparation of solutions for injections. Preparation: A medicinal tea is prepared using 2." --- Joerg Gruenwald, Ph.D., *PDR for Herbal Medicines*

"Mistletoe. mistletoe is a cardiac tonic that stimulates circulation. Fifteen drops taken three times a day, or three cups of tea daily, help lower blood pressure and alleviate heart strain. mistletoe should not be overused, nor should the berries be eaten. Motherwort. Helps stabilize the electrical rhythm

of the heart. The amount taken should be monitored by a doctor. Wild yam. Stimulates production of DHEA. Low levels of this hormone have been related to higher incidences of heart disease. Wild yam can provide added protection and is completely safe." --- Dr. Gary Null, *The Woman's Encyclopedia of Natural Healing*

"Reinsubstanz Gegen Standardisierten Extrakt" [Comparative Studies on the Immunoactive Action of Galactoside-Specific mistletoe Lectin: Pure Substance Compared to the Standardized Extract], Arzneimittelforschung 43, no. 2 (February 1993): 166-69. Iscador, a mistletoe (Viscum album) extract, was shown to have an anti-breast-cancer effect. T. Hajto, "Immunomodulatory Effects of Iscador: A Viscum Album Preparation," Oncology, 43, suppl. (1986): 51-65. Breast cancer patients in a study were administered a single infusion of iscador, an extract of mistletoe (Viscum album) intravenously." --- Dr. Gary Null, The Woman's Encyclopedia of Natural Healing

"Loranthaceae) A relative of mistletoe (Viscum album L.), Phrygilanthus eugenioides is used in the voodoo cult as a magical plant. It is said to have psychoactive or hallucinogenic powers (Schultes and Farnsworth 1982, 187*; Schultes and Hofmann 1980, 367*). Curiously, the ancient texts suggest that mistletoe may also produce psychoactive effects (cf. Benthamia alyxifolia). Podophyllum peltatum L." --- Christian Ratsch, *The Encyclopedia of Psychoactive Plants: Ethnopharmacology and Its Applications*

"MISTLETOE Of two notable studies of mistletoe, the plant hung up at Christmas, one indicated that iscador, an extract from European mistletoe, when combined with lactobacillus, doubles the ability of natural killer cells to destroy malignant cells; while a second examination, reported at a 1992 AIDS conference, indicated one extract from the herb "had anti-HIV, immunomodulating and anti-cancer activities in 12 symptomatic HIV disease patients followed for 6 years." --- Gary Null, James Feast, *AIDS: A Second Opinion*

"Rudolph Steiner, PhD popularized the use of mistletoe in the early 20th century. A certain lectin in mistletoe has been found to inhibit the growth of proliferating cells. By the 1980s, about 40,000 patients worldwide were receiving Iscador, a fermented form of mistietoe that is injected. Iscador and its variations are licensed in Germany as dmgs. -Stanislaw R. Burzynski, MD, PhD theorized that certain anti-neoplastons, or naturally occurring peptides, could inhibit the growth of tumor cells without intermpting normal cell growth." --- Patrick Quillin, *Beating Cancer with Nutrition*

"PHARMACOLOGY: Despite the popular knowledge that the two types of mistletoe have opposite pharmacologic effects (ie, American mistletoe: Stimulates smooth muscle, raises blood pressure, increases uterine and intestinal motility; European mistletoe: Reduces blood pressure, antispasmodic, calming agent), investigations have shown that the stems and leaves of these plants contain the proteinaceous phoratoxins and viscotoxins and thus exert similar pharmacologic effects." --- Ara Dermarderosian, *Guide to Popular Natural Products*

"BOTANY: American mistletoe comprises the Phoradendron species and European misdetoes V. album, V. abi-etis and V. austriacum. Mistletoes are semiparasitic woody perennials commonly found on oaks and other deciduous trees. These evergreen plants produce small white berries and are used as Christmas ornaments. These plants should not be confused with the New Zealand mistletoe (Ileostylus micran-thus), which contains cytotoxic compounds that may be derived from the host tree {Podocarpus totara)." --- Ara Dermarderosian, Guide to Popular Natural Products

"PHARMACOLOGY: Despite the popular knowledge that the two types of mistletoe have opposite pharmacologic effects (ie, American mistletoe: Stimulates smooth muscle, raises blood pressure, increases uterine and intestinal motility; European mistletoe: Reduces blood pressure, antispasmodic, calming agent), investigations have shown that the stems and leaves of these plants contain the proteinaceous phoratoxins and viscotoxins and thus exert similar pharmacologic effects." --- Ara Dermarderosian, *Guide to Popular Natural Products*

"Mistletoe. mistletoe is a cardiac tonic that stimulates circulation. Fifteen drops taken three times a day, or three cups of tea daily, help lower blood pressure and alleviate heart strain. mistletoe should not be overused, nor should the berries be eaten. Motherwort. Helps stabilize the electrical rhythm of the heart. The amount taken should be monitored by a doctor. Wild yam. Stimulates production of DHEA. Low levels of this hormone have been related to higher incidences of heart disease. Wild yam can provide added protection and is completely safe." --- Dr. Gary Null, *The Woman's Encyclopedia of Natural Healing*

"A study examining the effects of a mistletoe extract on breast cancer patients found an immune-enhancing effect. J. Beuth et al., "Vergleichende Untersuchungen zur Immu-naktiven Wirkung von Galaktosid-Spezifischem Mistellektin. Reinsubstanz Gegen Standardisierten Extrakt" [Comparative Studies on the Immunoactive Action of Galactoside-Specific mistletoe Lectin: Pure Substance Compared to the Standardized Extract], Arzneimittelforschung 43, no. 2 (February 1993): 166-69. Iscador, a mistletoe (Viscum album) extract, was shown to have an anti-breast-cancer effect. T." --- Dr. Gary Null, *The Woman's Encyclopedia of Natural Healing*

"Journal Society Integrative Oncology 4: 3-7, 2006] mistletoe extract has been shown to reduce adverse effects of radiotherapy and chemotherapy on the microcirculation and the immune system of cancer patients. [Anticancer Research 25:601-10, 2005] Iscador is popular in Germany where it was recently shown to improve survival (slightly) among malignant melanoma patients. [Arzneimiftelforschung 55:38-49, 2005] Iscador has also been shown to prolong survival among breast cancer patients." --- Bill Sardi, *You Don't Have to be Afraid of Cancer Anymore*

"Iscador (Mistletoe) Iscador is the trade name for a mistletoe preparation that has been used by European physicians since 1920. Iscador consists of fermented extracts of European mistletoe (Viscum album), some forms of which are combined with small amounts of metals to produce anticancer effects.227 Originally conceived by Rudolf Steiner (1864-1925), Austrian scientist and founder of anthroposophic medicine, the therapeutic success of Iscador has been reported in nearly 5,000 case studies." --- Larry Trivieri, Jr., Alternative Medicine the Definitive Guide, Second Edition

"History & Folklore In Norse mythology, a mistletoe bough was used to slay Balder, the god of peace. The plant was subsequently entrusted to the goddess of love, and kissing under it became

obligatory. Medicinal Actions & Uses European mistletoe is chiefly used to lower blood pressure and heart rate, ease anxiety, and promote sleep. In low doses it also relieves panic attacks, headaches, and improves concentration. European mistletoe is also prescribed for tinnitus and epilepsy. In anthroposophical medicine, extracts of the berries are injected to treat cancer." --- Andrew Chevallier, *The Encyclopedia of Medicinal Plants*

"In this review article, the author notes that studies from their lab have demonstrated that mistletoe extact exhibits significant anticancer activity against a variety of experimental tumor systems, in vitro and in vivo, particularly those modeling for lung, breast and colon carcinomas. —T.A. Khwaga, "Biopharmacological Studies of Different Components of Viscum Album (Mistletoe)," Anticancer Research, 10(5B), 1990, p. 1374-1375. This study examined the antiproliferative effects of Viscum album C, Viscum album Qu and Viscum album M on melanoma cell lines." --- Gary Null, Ph.D., *The Clinician's Handbook of Natural Healing*

"This study examined the cellular aspects of the immunomodulating activity of propriety mistletoe extract (Eurixor) standardized for mistletoe lectin-1 (ML-1) in 20 mammary cancer patients. Results showed that subcutaneous injections of the different dosages (0.5 and 1.0 ng ML-1/kg body weight, twice a week, for 5 weeks) led to statistically significant increases of defined peripheral blood lymphocyte subsets (helper T cells, natural killer cells) which are gerneally beleived to be involved in antitumor activity." --- Gary Null, Ph.D., *The Clinician's Handbook of Natural Healing*

"This study isolated a tumor reducing component from mistletoe extract (Iscador) and identified to be a peptide of approximate molecular weight 5000. The isolated peptide reduced the solid tumour induced by Dalton's lymphoma ascites tumour cells in mice and was highly cytotoxic to the DLA cells but was not cytotoxic to normal lymphocytes, indicating a cell dependent specificity. —G. Kuttan, et al., "Isolation and Identification of a Tumour Reducing Component from mistletoe Extract (Iscador)," Cancer Letters, 41(3), August 30, 1988, p. 307-314." --- Gary Null, Ph.D., *The Clinician's Handbook of Natural Healing*

"Petricic J and Kalogjera Z: Isolation of glucosides from mistletoe leaves (Viscum album L.). Acta Pharm Jugosl 30,163,1980. 10. Wagner H, et al.: Phenylpropanes and lignanes of Viscum album. Planta Medica 2,102, 1986. 11. Petkov V: Plants with hypotensive, antiatheromatous and coronary dilatating action. Am J Chin Med 7,197-236,1979. 12. Hajto T: Immunomodulating effects of Iscador: A Viscum album preparation. Oncology 43(Suppl. 1), 51-65,1986. 13. Jordan E and Wagner H: Detection and quantitative determination of lectins and viscotoxins in mistletoe preparations." --- Michael T. Murray, N.D., *The Healing Power of Herbs: The Enlightened Person's Guide to the Wonders of Medicinal Plants*

"Since pharmacologically active compounds appear to be concentrated within the mistletoe, different host trees providing different chemical constituents could be used for different therapeutic action. In addition, the proteins/lectins are present only in aqueous (water) extracts, indicating therapeutic activity may differ from aqueous and alcoholic/aqueous (tincture) extracts. The alcoholic/aqueous extracts would also demonstrate considerably less toxicity. History and folk use Mistletoe was held in great reverence by the druids. Dressed in white robes, they would search for the sacred plant." --- Michael T. Murray, N.D., *The Healing Power of Herbs: The Enlightened Person's Guide to the Wonders of Medicinal Plants*

"The historic use of mistletoe for cancer is now being tested by research. It is interesting to note that mistletoe grows on trees similar to a cancerous growth in the body. Contraindications: It is contraindicated in pregnancy due to the emmenagogue and abortifacient effects in animals which are associated with tyramine. It is also contraindicated in protein hypersensitivity and chronic, progressive infections like tuberculosis and AIDS. This is a potentially dangerous herb and should only be used by skilled practitioners." --- Sharol Tilgner, N.D., *Herbal Medicine From the Heart of the Earth*

"The blood pressure-lowering activity may depend on the form in which the mistletoe is administered and the host tree from which it was collected. Studies indicate aqueous extracts are more effective and the highest hypotensive activity was demonstrated by a macerate of leaves of mistletoe growing on willow, gathered in January.11 If nonprotein viscum components (e.g., flavonoids, phenol carboxylic acids, phenylpropanes, and lignans) were shown to possess blood pressure-lowering action, then alcoholic solutions (tinctures and fluid extracts) may be useful solutions." --- Michael T. Murray, N.D., *The Healing Power of Herbs: The Enlightened Person's Guide to the Wonders of Medicinal Plants*

"Even the mistletoe growing on the mulberry tree has positive therapeutic properties not unlike European mistletoe (Viscum album). Both are used for hypertension and are classified as being antispasmodic and antirheumatic. Both have analgesic and anticarcinogenic properties. They are used for hypertension and to relieve rheumatic pains and spasms especially of the upper part of the body. Dose, 9-15 grams." --- Michael Tierra, *The Way of Herbs*

"In one study of women with breast cancer who were undergoing chemotherapy, half the patients were given a preparation of mistletoe, while half were given a placebo. After the fourth round of chemo, those getting mistletoe had three times as many white blood cells as the control group (3,000 count vs. 1,000 count). The Journal of the National Cancer Institute reported that polyphenals from green tea induced cell death in carcinoma cells in vitro. An extract of green algae showed a "pronounced antitumor effect" in mice." --- The Disinformation Company, Everything You Know Is Wrong: *The Disinformation Guide to Secrets and Lies*

"Skeptics make fun of the manner in which mistletoe is gathered. A quack-baiting Website sneers at claims that "the time of picking the plants [is] important because they react to the influences of the sun, moon, and planets." However, there is a core of rationality to many traditional practices. Certain chemicals in mistletoe can combine with metals to form organometaflic compounds, which have different biological or medicinal properties than the ones naturally found in the plant." --- Ralph W. Moss PhD, *Herbs Against Cancer: History and Controversy*

"Those with late-stage cancers say mistletoe makes a dramatic improvement in general health. See Materia Medica for dose. (Mistletoe resources, page 167.) • Vaccine-like preparations of killed bacteria stimulate dramatic activity in the immune system, including an increase in tumor necrosis

factor which causes tumors to hemorrhage and liquefy. These preparations are currendy being tested on women with breast (and ovarian) cancers. • Chemotherapy is being urged on more and more women in earlier and earlier stages of breast cancer." --- Susun S. Weed, *Breast Cancer? Breast Health! The Wise Woman Way*

"Results & Notes: mistletoe has been used clinically in Europe for the treatment of breast (and other) cancers since 1926. It is most effective when injected under the skin near the tumor, but the tincture is also used orally as a systemic treatment. mistletoe is said to work by causing an inflammatory reaction which walls off the tumor, checking its growth and spread. References: 1, 3, 4, 6, 9, 18, 21, 23. Illustrated on page 158." --- Susun S. Weed, *Breast Cancer? Breast Health! The Wise Woman Way*

"Other Names: European mistletoe (Do not use American mistletoe) Type: Stimulating/Sedating Found in: Semiparasitic on deciduous trees in Europe, northern Asia. Part Used: Leaves and young twigs collected just before berries form; best after fermentation in water. Actions & Uses: Inhibits tumors; cytotoxic; cytostatic; enhances immune system (increases macrophages, natural killer cells, and T-cells); increases weight of thymus; tonifies heart and nerves. Important Constituents: Flavonoids, lectins, polypeptides, polysaccharides, saponins, tannins, tri-terpenes, viscotoxin." --- Susun S. Weed, *Breast Cancer? Breast Health! The Wise Woman Way*

"Heiny BM: Adjuvant treatment with standardized mistletoe extract reduces leukopenia and improves the quality of life of patients with advanced carcinoma of the breast getting palliative chemotherapy (VEC regimen). Krebsmedizin 12, 3-14,1991. 29. British Herbal Medicine Association, Scientific Committee: British Herbal Pharmacopoeia. British Herbal Medicine Association, Cowling, England, 1983, pp. 235-236. 30. Khwaja TA, et al.: Isolation of biologically active alkaloids from Korean mistletoe Viscum album, coloratum. Experientia 36, 599-600,1980. 31." --- Michael T. Murray, N.D., *The Healing Power of Herbs: The Enlightened Person's Guide to the Wonders of Medicinal Plants*

"Pharmacological activity of phenyl-propanoids of the mistletoe, Viscum album L. Host Pyrus caucasica Fed.', Phytomedicine 5: 11-17. Panossian, A., Wikman, G. and Wagner, H. 1999, 'Plant adaptogens III. Earlier and more recent aspects and concepts on their mode of action', Phytomedicine 6: 287-300. Pieretti, S., Di Giannuario, A., Capasso, A. and Nicoletti, M. 1992, 'Pharmacological effects of phenylpropanoid glycosides from Orobanche bederae', Phytotherapy Research 6: 83-93. Pintao, A., Pais, M., Coley, H. and Judson, I." --- Andrew Pengelly, *The Constituents of Medicinal Plants: An Introduction to the Chemistry and Therapeutics of Herbal Medicine*

"A Swiss study of fourteen breast cancer patients showed that a standardized extract of mistletoe, iscador, increased the rate at which breast cells were able to repair their DNA. Repairing DNA prevents mutations that can result in the formation of cancerous cells. At the beginning of the study, the rate at which cancer patients' cells repaired DNA damage was only 16 percent of that in healthy individuals. After just nine days of treatment, the rate increased to nearly 50 percent. In animal studies, mistletoe extracts prevent the spread of melanoma to lung tissue by approximately 80 percent." --- Phyllis A. Balch, CNC, *Prescription for Herbal Healing: An Easy-to-Use A-Z Reference to Hundreds of Common Disorders and Their Herbal Remedies*

"Tumors that are ordinarily immune to natural killer (NK) cells are conditioned by treatment with mistletoe to allow NK cells to "lock onto" and destroy cancer cells. mistletoe extracts increase the activity of NK cells by as much as five- to tenfold. The extracts also stimulate movement of immune cells called T cells that "patrol" the body seeking cancer and infection. In addition, these extracts also increase the production of beneficial free radicals that fight a wide range of cancers." --- Phyllis A. Balch, CNC, *Prescription for Herbal Healing: An Easy-to-Use A-Z Reference to Hundreds of Common Disorders and Their Herbal Remedies*

Fritz-Albert POPP Patents

Detection of microbial contamination, e.g. in food, drink and water
DE19538768

Detection of microbial contamination comprises measurement of the intensity of photons emitted by a sample in a polar solvent. A voltage is applied to electrodes placed in the sample and the measured photon emission intensity is compared with a control to determine the presence or absence of contamination.

The invention relates to a method for the detection of microbial infection.

To date, it has proved useful to detect bacteria or microbial infections in liquids (for example, beer) by colony formation of the possible germs in suitable nutrient media. The samples are applied to culture media and observed under favorable growth conditions. If, given a sufficiently large number of samples, no germination is observed after a sufficiently long incubation period of a few days, it is assumed that no germs are present. This method is now used almost everywhere where detection of microbial infections is required. A detailed description of this common method can be found in relevant textbooks, for example, by A. Koch, Growth Measurements in: American Society for Microbiology (ed. By Gerhardt, Murray, Costilow, Nester, Wool, Krieg, and Phillips) , 1981 pp. 179-206.

This customary method offers relatively high safety, but has the great disadvantage that the incubation time to the reliable detection of existing bacteria often lasts longer than a manufacturer can allow germ-free products. For technical or economic reasons, the product produced can therefore no longer be tested for germ-freeness before delivery.

In recent years, therefore, fluorescence methods have been used which take advantage of the fact that bacteria can be excited by fluorescence or by biochemical interventions. This allows direct detection of certain bacteria without delay. The method is fully described in the literature, for

example in: Wolff, LF, Anderson, L., Sandberg, GP, Reither, L., Binsfeld, CA, Corinaldesi, G. and Shelburne, CE: Bacteria Concentration Fluorescence Immunoassay (BCFIA) for the detection of periodontopathogens in plaque. J. Periodontol. 1992,63.1093-1101.

Although the fluorescence method can detect bacteria directly without time delay, it has the disadvantage that it is suitable only for specific bacteria which can be biochemically excited to fluorescence. Moreover, even in favorable cases, the detection limit is 10 bacteria / ml. It is therefore not generally applicable, but relatively individual and costly.

A process is known from the patents (European Patent EP 0430150, Fluids DE 44 01 169 A1, Cell Cultures P 43 08 520.2-41), which reduces the photon emission to a sensitivity of 10 <-17> W (corresponding to a few quanta per second And per cm 2) in the optical spectral range (from about 200-800 nm). This method can also be used to measure the recombination lights of charge carriers in liquids.

Surprisingly, it has now become apparent that this process is also suitable for displaying at least 100 bacteria / ml in polar liquids. Although the high sensitivity of the method for distinguishing the "quality" of liquids was already surprising, new studies on the detection of microbial infection provided the additional surprising finding that all microbial infections were already present at such low concentrations that they could not be detected by the other methods More detectable by significant changes in photon radiation. It has proved advantageous to bring the sample in an aqueous solution into a 10 ml quartz glass cuvette. In order to bring charge carriers into the liquid, one can advantageously enrich with 3 mM / l of cooking salt. A DC voltage of 30 volts, which is switched off again after a few seconds, is applied, for example, to two circuit boards, which are immersed in a needle-like manner parallel to the liquid at a distance of a few millimeters.

The sample is in absolute darkness. The intensity of the photon emission is measured with a light meter (which is described as a utility model, for example, in G 94 17 845.3).

It is shown that the presence of microbial infection is a sensitive change in photon emission.

The nature and state of the infection can be determined by a suitable variation of the measuring parameters (voltage, pH value, composition of the liquid, external excitation, spectral resolution), for example the question of which bacteria are involved and in which state (alive or Dead) the bacteria are present. Therefore, in addition to the first two patent claims, the claims 3 - 7. levied.

The invention is surprising and novel since the high sensitivity of the process was not known or predictable despite the known and partly patented basic building blocks. This high sensitivity combined with sufficient reproducibility makes the process interesting for many commercial areas.

The process is to be used in the beverage and brewing industry, in the monitoring of water, in the food industry, for example in dairy products, as well as in all other branches of the commercial economy which are dependent on the control of microbial infections.

Example

Into a 10 ml quartz cuvette, two needle-shaped circuit boards are inserted in parallel at a distance of 5 mm and connected to a DC voltage source. To the cuvette are added successively 8 ml of pure saline solution (3 mM / l of saline), the same solution with an additional concentration of 10 Rhizobium japonicum 1132-2 bacteria / ml and the same solution with a concentration of 100 Rhizobium japonicum 1132- 2 bacteria / ml.

In any case, a DC voltage of 80 volts is applied for a period of 5 seconds. At the same time, the intensities of photon emission (in number of photons / 100 ms) are measured over the period of 5 s. The measurement is repeated three times. The mean values and scatterings of the three measurements are formed. Table I contains the results. Table I
The result shows that this method can significantly detect 10 bacteria / ml.

Method and means of determining the health conditions of a living creature.
ZA9208094
The invention relates to a method and device for determining the state of health of a living being. The invention provides for a selected, physiological parameter of the living being, e.g. the conductivity of the skin, to be recorded on a statistically significant multiplicity of measuring points distributed over a defined part of the body of the living being, for the frequency distribution of the recorded measurements to be determined and compared with a reference frequency distribution of the selected, physiological parameter. The reference frequency distribution is a logarithmic distribution which can be determined directly from the measurements obtained from the particular test subject by statistical methods. The invention permits reliable statements to be made regarding the overall state of health of the test subject.

Method for quickly determining qualities/qualitative changes in any system
US7692788
The invention relates to a method for testing the slightest quality differences or quality features of any objects and agents interacting therewith based on measuring the percentage scatter of "ultraweak" photon emissions ("biophotons" in biological systems) and the delayed luminescence in a scatter chamber (darkroom). These scatter percentages can vary to such an extent as to enable the sufficiently sensitive registration of slightest quality differences (quality features).

Method for testing external influences on biological tissues
US2006270055
The invention relates to a method for testing external influences on biological systems by measuring "ultraweak photon emissions (biophotons) and "delayed luminescence", based on non-local and different changes of photon emissions on different points of the tissue through exposure to the external influence. The changes can vary to such an extent that the slightest differences in the influences can be can be registered with the highest sensitivity.

Method of and apparatus for examining biological effects in cell-lots
US4458531
In a method of testing the biological effects of cell-lots, which release a characteristic or stimulatable ultra-weak photon radiation, the intensity and/or the photon statistic of the ultra-weak photon radiation is measured, as the test factor, for the purpose of the in vitro examination of substances for possible cell-damaging or regenerating effects, or for the purpose of carrying out quality control on biological substances, such as foodstuffs, edible plants or seed materials.

Method for testing quality and quality changes of biological systems and organochemical compositions interacting with these systems using measurements of ultraweak photon emission.
EP0430150
Known status parameters for the quality of biological systems, foodstuffs and organic chemical compounds interacting with the latter are with the methods of comparative statistical analysis with measured parameters of ultraweak photon emission. This makes it possible to reflect reproducibly the quality content and the vitality of a biological system in the sense of Erwin Schrödinger's quality term by means of measured parameters, to measure the quality of foodstuffs and to determine in advance expected changes in quality on storage, and to predict the biocompatibility of organic chemical compounds. Foodstuffs irradiated for preservation purposes can still be distinguished significantly from non-irradiated even one year after the irradiation by the intensity of the photon emission. Environmental effects on live systems can be characterised almost directly as environmental stress or damage by observing the ultraweak photon emission over a short time.

DEVICE FOR THE DETERMINATION OF FUNCTIONAL VALUES
EP1776042
The invention relates to a device for the determination of functional values of biological systems, whereby in particular, the conductivity of the skin is recorded as a functional value. The measured values for the conductivity are determined using an electrode matrix (1) in a measuring device (11), whereby a current circuit to a reference electrode (13) is formed and the measured values are subsequently stored and analysed.

METHOD FOR DETECTING BACTERIAL INFECTION
EP1340066
The invention relates to a method for detecting bacterial infection or contamination of or in products in order to be able to rapidly determine the product's quality or sterility. To this end, the intensity of photon emission of a nutrient medium is determined and measured with a sample of the object to be examined.

METHOD, SYSTEM AND USE OF MEASURING DEVICES FOR DETERMINING THE GERMINABILITY OF SEEDS
EP1188041
A process (I) and apparatus for determining the germination characteristics of seed corn by bio-photon and water moisture detection, are new. In a process (I) to determine the germination capacity of seed grain especially cereals, the seed grain is first exposed to light pulses for a defined period and the exposure then terminated. A measurement is made of at least one characteristic of the light then emitted by the seed without further light stimulation especially the residual luminescence or spontaneous light emission. The light emitted gives an indication of the germination capacity of the seed. In addition a further measurement is made especially of the seed grain water content, and is used as a correction factor to the germination characteristic based on the light value. An Independent claim is also included for apparatus for use in (I).

Method and device for determining the malignancy of tumor tissue and for choosing substances beneficial to the tissue
EP1126271
Method involves measurement of the bio-photon emission from tumor tissue using a very sensitive light detector. The tissue can first be excited using illumination with suitable wavelength light, using ultrasound, etc and then the value of emitted light measured. From the measurements a suitable medicine can be selected to treat the tumor. An Independent claim is made for a system for treating malignant cancers by determining the degree of malignancy from light measurements and then determining the optimum medicine.

Method for optimal interpretation of data evaluating regulatory capacity of biological system, in particular human being, comprises use of factor analysis and comparison with reference data
DE102005058332
One of the physiological parameters of a biological system in particular of a human being, which can be the galvanic skin response, is measured at a large number of subjects. The data are evaluated by using various appropriate statistical methods. The log-normal distribution and the Gaussian distribution are calculated. The resulting matrix is used as a base for a factor analysis already containing the data of a reference group. The position of the factors can be used as a criterion for the evaluation of the condition of an individual regarding the regulatory capacity of his/her system.

Functional value e.g. regulating capability, determining method for e.g. human being, involves evaluating light signal after deviation from pure random distribution and correlation to ideally regulating distribution
DE102004055200
The method involves evaluating a light signal after a deviation from a pure random distribution and a correlation to an ideally regulating distribution. A strewing portion of a photon is measured, where the photon is used for stimulation of a biological system. The light signal is utilized as a trigger pulse for treatment of a relevant skin area of the biological system.

Function data determination method e.g. for regulation capabilities of biological system...
DE10355348
The method involves collecting a multiplicity of measured values of the conductivity of the skin and determining the frequency distribution of the measured values. The frequency distribution of the measured values is compared with a normal distribution (1) and a logarithmic normal distribution (2). The conductivity of the skin is determined on a hand. Approximately 500 measured values in approximately 10 minutes are determined. An independent claim is included for a device

for the determination of function values.

Testing for the smallest possible quality differences between biological tissue by measurement of bio-photon emission and application of photon count statistics
DE10147701
Method for testing for the smallest possible quality differences between biological tissue by measurement of bio-photon emission and delayed luminescence. Measurement of photon emission is with or without the effect of interacting agents. Differences in measurements are determined using photon count statistics.

Determining heat regulating capacity of biological systems involves irradiating with infrared light, detecting relaxation of photon intensity and compensating using hyperbolic function
DE10132549
The process involves determining the quality and/or quality changes of biological systems by measuring the ultra-weak photon emission of a system subjected to the light after ending the radiation. The biological system is irradiated with infrared light and the relaxation of the photon intensity is detected against time and then the relaxation function of the investigated system is compensated using a hyperbolic function.

Examining changes in the condition of biological tissue
DE4439451
In a method for examining changes in the condition of human, animal or plant tissue by measurement of ultra-weak photo emission, the new feature is that the measuring parameters of the emission are employed.

Faster procedure for detecting differences in fluid characteristics
DE4401169
A method for discriminating between the characteristics of similar fluids employs differences in the respective photon emissions of fluid samples after their identical excitation at a controlled temperature. Each sample (1) is successively enclosed in a transparent quartz vessel having a pair of titanium electrodes (2,3) supplied with a DC potential of typically 18 volts. An excitation system (4) activates the sample either by energising a tungsten light source of controlled spectrum or by EM/sound waves of constant intensity and wavelength. After a definite period of excitation the luminescence of the sample is measured by the detector(s).

Method for differentiating between homozygotes, heterozygotes and normal cells of an organism
DE4308520
A method is specified for differentiating between homozygotes, heterozygotes and normal cells of an organism. It is characterised in that the cells to be investigated are irradiated with UV light and/or treated with a substance which partly damages the cells and the intensity of the photon emission of these cells is subsequently measured. The method is preferably used before X-ray diagnosis in which the risk of inducing a disease triggered by the radiation is to be no greater than the probability of early diagnosis of a disease.

Examining biological effects on foodstuffs of seeds - by measuring intensity of ultra-weak photon radiation in vitro
DE3040855
A measurement of the spontaneous or stimulated emission of ultra-weak photon radiation is used as an in vitro parameter of a cell lot. The parameter is used to detect possible cell-damaging or regenerating effects or to act as a quality control. The measured quantity is either the photon intensity or a photon statistic e.g. the distribution of numbers of photons emitted in a measuring interval. The ultra-weak radiation is typically in the infra red band and has an energy very much less than that of thermal radiation. Typically the radiation is 10 power (-10) less than thermal radiation. The radiation is detected by a photo multiplier with a gain of over 10 power 6. The method may be used to determine whether a cell lot is in a healthy state. Alternatively it can be used to determine the effect of an agent on the cells. The method is partic. suitable for quality control in foodstuffs.

Examining biological effects on foodstuffs of seeds - by measuring intensity of ultra-weak photon radiation in vitro
DE3038255
A measurement of the spontaneous or stimulated emission of ultra-weak photon radiation is used as an in vitro parameter of a cell lot. The parameter is used to detect possible cell-damaging or regenerating effects or to act as a quality control. The measured quantity is either the photon intensity or a photon statistic e.g. the distribution of numbers of photons emitted in a measuring interval. The ultra-weak radiation is typically in the infra red band and has an energy very much less than that of thermal radiation. Typically the radiation is 10 power (-10) less than thermal radiation. The radiation is detected by a photo multiplier with a gain of over 10 power 6. The method may be used to determine whether a cell lot is in a healthy state. Alternatively it can be used to determine the effect of an agent on the cells. The method is partic. suitable for quality control in foodstuffs.

Diagnosis of tumours and direction of treatment - by measuring ultra-weak photon emission characteristics of sample tissue
DE2844217
The method of diagnosing malignity of sample tissue and direction of the therapy selected for malignant tumours involves measuremtn of ultra weak photon emissions in the spectral range from infrared to ultraviolet. The method of diagnosis is based on the fact that the radiations emitted by tumours differ in intensity and other characteristics from those emitted by normal tissues. The characteristics evaluated are to be found in the documents referenced. The beam intensity, for example, increases with increasing malignity. The method fo treatment management involves treating sample tissue with different selected substances and simultaneously measuring the ultra weak photon emissions. The most suitable substance for treatment is that which changes the characteristics of the cell radiations most clearly in the direction of the corrsp. characteristics of norma tissue.

http://biophotonservices.com/dr-fritz-albert-popp/biophotons-and-relationship-to-the-ultraviolet-spectrum/
Biophoton Services
1151 Harbor Bay Parkway, Suite 100, Alameda, CA 94502

Biophotons : How they Influence Healing by Increasing the Communication of DNA.

Dr. Fritz Albert Popp showed with this experiment using onions that UV light causes onions to communicate with each other. He showed that cancer tumors reacted to high intensity levels of UV light in the range of 380 nanometers. By using a method called photo repair he illuminated cells with a weaker intensity of UV light, causing the DNA to undergo rapid healing.

It is only when UV light is at a lower intensity level that the healing of DNA occurs. With the help of a lab assistant, Dr. Popp built a machine called the "photomultiplier" which measures weak photon emissions that stimulate healing. While measuring these photons in humans, he discovered that the cells of the body have a biological rhythms of 7, 14, 32, 80 and 270 days respectively. These numbers all readily divided into 7. It also showed that people who had these disturbed biological rhythms were cancer patients. His research also showed that stress triggered an increase in biophotons, which short term can be beneficial to good health.

It is no surprise that foods highest in biophotons are also used as natural cancer cures, especially when you eat them within 3 hours after being picked from the ground. Dr. Gabriel Cousens states that people who have a junk food diet register 1,000 or less biophotons in their systems, whereas people eating a fresh raw food diet have 83,000 or more biophotons in their bodies.

Scientist Dr. Pjotr Garajajev used UV photons to transfer a frogs embryo into a salamanaders embryo, which in turn caused the salamander to give birth to a frog. Below is a video showing a machine where German researchers add biophotons to a dead leaf of a plant and how it "brings it back to life" again.

It is my theory that because mistletoe is highest in biophontons, which are connected to sunlight, and vitamin D promotes bone growth and stimulates the immune system, and many leukemia patients show a vitamin D deficiency, than foods highest in these "biophotons" would increase the flow of biophotons in the body.

Foods highest in biophotons: wild dandelion greens, nettles, grasses, mushrooms, nuts and berries

---

http://www.ncbi.nlm.nih.gov/pubmed/18314258
Cancer Lett. 2008 Jun 18;264(2):218-28. doi: 10.1016/j.canlet.2008.01.036. Epub 2008 Mar 7.

Molecular mechanisms of mistletoe plant extract-induced apoptosis in acute lymphoblastic leukemia in vivo and in vitro.

Seifert G1, Jesse P, Laengler A, Reindl T, Lüth M, Lobitz S, Henze G, Prokop A, Lode HN.

Abstract

Viscum album (Mistletoe) is one of the most widely used alternative cancer therapies. Aqueous mistletoe extracts (MT) contain the three mistletoe lectins I, II and III as one predominant group of biologically active agents. Although MT is widely used, there is a lack of scientifically sound preclinical and clinical data. In this paper, we describe for the first time the in vivo efficacy and mechanism of action of MT in lymphoblastic leukemia. For this purpose, we first investigated both the cytotoxic effect and the mechanism of action of two standardized aqueous MTs (MT obtained from fir trees (MT-A); MT obtained from pine trees (MT-P)) in a human acute lymphoblastic leukemia (ALL) cell line (NALM-6). MT-A, MT-P and ML-I inhibited cell proliferation as determined by Casy Count analysis at very low concentrations with MT-P being the most cytotoxic extract. DNA-fragmentation assays indicated that dose-dependent induction of apoptosis was the main mechanism of cell death. Finally, we evaluated the efficacy of MT-A and MT-P in an in vivo SCID-model of pre-B ALL (NALM-6). Both MTs significantly improved survival (up to 55.4 days) at all tested concentrations in contrast to controls (34.6 days) without side effects.

Partial Bibliography

Popp, E.A. : "Photon Storage in Biological Systems";Electromagnetic Bioinformation, Proceedings of the Symposium, Marburg, September 5, 1977 (Munchen-wien-Baltimore (1979)

Popp, F. A., Ruth, B., Bahr, W., Bohm, J.,Grass, P., Grolig, G, Rattemeyer, M. Schmidt,H.G., and Wullle, P.;"Emission of Visible and Ultraviolet Radiation by Active Biological Systems", Collective Phenomena, Vol. 3, pp. 187-214 (1981)

Popp, E.A., ed., Electromagnetic Bioinformation, Urban & Schwartzenberg, Munchen-Wien-Baltimore (1989)

Popp, F.A., et al., Recent Advances in Biophoton Research and Its Applications, eds. F.A.Popp et al, World Scientific, Singapore (1992)

Popp, F.A., and Li, K.H., "Hyperbolic Relaxation as a Sufficient Condition of a Fully Coherent Ergodic Field," Int. J. Theor. Phys., Vol. 32, pp. 1573-1583 (1993)

Popp, F.A., Chang, J.J., Gu, Q., and Ho, M.W., "Nonsubstantial biocommunication in terms of Dicke's theory," in Bioelectrodynamics and Biocommunication, ed. by Ho, M.W., Popp, F.A., and Warnke, U., World Scientific, Singapore (1994)

Popp, F.A.; Gu, Q.; and Li, K.H.; "Biophoton Emission: Experimental Background and Theoretical

Approaches," Mod. Phys. Lett. B, Vol. 8, Nos. 21 & 22, pp. 1269-1296 (1994a)

Popp, F.A., Chang, J.J., Herzog, A., Yan, Z., and Yan, Y., "Evidence of Non-Classical (Squeezed) Light in Biological Systems," Physics Letters A, Vol. 293, Nos. 1-2, pp. 98-102 (2002)

Popp, F.A., "Properties of Biophotons and Their Theoretical Implications," Indian Journal of Experimental Biology, Vol. 41, May, pp.391-402 (2003)

Popp, F.A., "Biophysical Aspects of the Psychic Situation," International Institute of Biophysics, http://www.lifescientists.de/ib0203e_1.htm

---

MISTLETOE PATENTS

KR20100102471
EFFECT OF KOREAN MISTLETOE EXTRACT ON THE EXTENSIONS OF LIFE SPAN

Inventor(s): KIM JONG BAE [KR]; MIN BYENG YYEL [KR]; YOO YUNG CHOON [KR]; KIM SAE JOONG [KR]; JUNG HOE YUNE [KR]; LEE AN NA [KR]; PARK SUNG MIN [KR]; SONG TAE JUN [KR]; KANG TAE BONG [KR]; KIM YOUNG HOON [KR]; AN HYO SUN [KR] + (KIM, JONG BAE, ; MIN, BYENG YYEL, ; YOO, YUNG CHOON, ; KIM, SAE JOONG, ; JUNG, HOE YUNE, ; LEE, AN NA, ; PARK, SUNG MIN, ; SONG, TAE JUN, ; KANG, TAE BONG, ; KIM, YOUNG HOON, ; AN, HYO SUN)
Applicant(s): MISTLE BIOTECH CO LTD [KR]; LEE YOUNG YONG [US] + (MISTLE BIOTECH CO., LTD, ; LEE YOUNG YONG)
Classification: - international: A23L1/30; A61K36/8968; A61P39/06

Abstract -- PURPOSE: A Viscum album extract with anti-aging activity is provided to ensure life extension and to improve human health by being applied to functional foods or pharmaceutical compositions. CONSTITUTION: A Viscum album extract has an anti-aging activity. The Viscum album extract is obtained by cold water extraction or hot water extraction. The cold water extraction is performed by adding 1L of water to 200g of Viscum album and stirring for 2-4 hours. The hot water extraction is performed by adding 1L of water to 200 of Viscum album cold water extract and heating at 100[deg.]C for 30 minutes. A functional food composition with anti-aging activity contains Viscum album extract as an active ingredient. A pharmaceutical composition for anti-aging activity contains Viscum album extract as an active ingredient.

CN101486772
Mistletoe polysaccharide, as well as preparation and use thereof

Inventor(s): ZHUNAN GONG [CN]; XIAOLING SHENG [CN]; ZIGANG WU [CN]; YUSI ZHANG [CN]; WEI WANG [CN] + (GONG ZHUNAN, ; SHENG XIAOLING, ; WU ZIGANG, ; ZHANG YUSI, ; WANG WEI)
Applicant(s): UNIV NANJING NORMAL [CN] + (NANJING NORMAL UNIVERSITY)
Classification: - international: C08B37/00

Abstract -- A mistletoe polysaccharide consists of glucose, arabinose, galactose, glucuronic acid and galacturonic acid, with the molecular weight of 1.1 multiplied by 10-3.4 multiplied by 10Da, the terminal group carbon of Alpha-configuration, and the specific rotation of [Alpha]D being equal to plus 134.6 degrees to plus 167.3 degrees; and the basic skeleton of the polysaccharide consists of 1-5 glycosidic bond connected Arab sugar and 1-6 glycosidic bond connected galactose. The mistletoe polysaccharide is obtained by water extraction and alcohol precipitation, an ion exchange chromatography and a molecular sieve chromatography by further purification. The mistletoe polysaccharide has obvious inhibition action on Hela cells and mouse transplanted tumors S-180, so the polysaccharide can be used for preparing drugs for treating cancer.

KR20090120348
EXTRACTS ISOLATED FROM MISTLETOE FOR ENHANCING POWER OF EXERCISE PERFORMANCE AND SUPPRESSING FATIGUE

Inventor(s): KIM JONG BAE [KR]; CHO EUN HO [KR]; KIM HYO JOON [KR]; YOO YUNG CHOON [KR]; KIM SE JOONG [KR]; CHOUNG HEO YOON [KR]; LEE AN NA [KR]; PARK SUNG MIN [KR]; SONG TAE JOON [KR]; CHOUNG HWAN JUN [KR] + (KIM, JONG BAE, ; CHO, EUN HO, ; KIM, HYO JOON, ; YOO, YUNG CHOON, ; KIM, SE JOONG, ; CHOUNG, HEO YOON, ; LEE, AN NA, ; PARK, SUNG MIN, ; SONG, TAE JOON, ; CHOUNG, HWAN JUN)
Applicant(s): MISTLE BIOTECH CO LTD [KR]; KIM JONG BAE [KR] + (MISTLE BIOTECH CO., LTD, ; KIM, JONG BAE)
Classification: - international: A61K36/8968

Abstract -- PURPOSE: A composition containing Viscum album extract is provided to enhance exercise ability and suppress fatigue in muscle. CONSTITUTION: A Viscum album extract which relieves fatigue is obtained by cold water extraction or hot water extraction. The cold water extract is obtained by adding 1L of water to 200g of Viscum album then stirring at 4[deg.]C for two hours. The hot water extract is obtained by adding 1L of water to 200g of residual extract of cold water then heating at 100[deg.]C for 30 minutes. A functional food composition or pharmaceutical composition for enhancing exercise activity or relieving fatigue contains the Viscum album extract as an active ingredient.

KR20080054829
THE METHOD OF EXTRACTING USEFUL COMPONENT FROM MISTLETOE, AND THE EXTRACT

Inventor(s): PARK DAE SIK [KR]; BAE MAN JONG [KR] + (PARK, DAE SIK, ; BAE, MAN JONG)
Applicant(s): SC BIOTECH CO LTD [KR]; PARK DAE SIK [KR]; BAE MAN JONG [KR] + (SC BIOTECH CO., LTD, ; PARK, DAE SIK, ; BAE, MAN JONG)
Classification: - international: A61K36/185; A61P35/00; A61P37/00
Also published as: KR100841453 (B1)

Abstract -- A method for extracting a useful anticancer component from mistletoe(Viscum album L.) is provided to inhibit hypersensitivity causing allergy and improve anticancer and immunity cell-activating effects by fermentation, and reduce the extraction costs by simplifying the extraction procedures. A method for extracting a useful component from mistletoe comprises the steps of: (a) dipping mistletoe in water of pH 5.5-5.7 for 2 hours; (a) steaming the dipped mistletoe in a vessel to sterilize it; (c) inoculating a mycelium of shiitake mushroom into the sterilized mistletoe and fermenting it at 25-27 deg.; C for 2-3 weeks, and further comprises a step (d) of drying and pulverizing the fermented mistletoe, extracting and filtering the mistletoe powder with sodium chloride solution, and regulating pH of the filtered solution by treatment of acid/alkali, wherein the useful component is lectin having anticancer activity. Further, 1 to 10% of yeast powder is additionally added into the water in the step (a).

DE19641518
Mistletoe chitin-binding lectin

Inventor(s): PFUELLER UWE PROF DR [DE]; PEUMANS WILLY PROF DR [BE]; DAMME ELS VAN PROF DR [BE] + (PFUELLER, UWE, PROF. DR., 12527 BERLIN, DE, ; PEUMANS, WILLY, PROF. DR., LANGDORP-AARSCHOT, BE, ; DAMME, ELS VAN, PROF. DR., LANGDORP-AARSCHOT, BE)
Applicant(s): PRIVATE UNI WITTEN HERDECKE GM [DE]; PEUMANS WILLY PROF DR [BE]; DAMME ELS PROF DR VAN [BE] + (PRIVATE UNIVERSITAET WITTEN / HERDECKE GMBH, 58453 WITTEN, DE, ; PEUMANS, WILLY, PROF. DR., LANGDORP-AARSCHOT, BE, ; VAN DAMME, ELS, PROF. DR., LANGDORP-AARSCHOT, BE)
Classification: - international: C07K14/42; A61K38/00; (IPC1-7): A61K38/16; C07K14/42 - European: C07K14/42

Abstract -- Mistletoe chitin-binding lectin in the form of a homo-dimeric protein consisting of two identical subunits with a molecular weight of 10.8 kDa, is new. Also claimed is a process for producing the lectin by extraction from plant material followed by chromatography.

The invention relates to a novel lectin, chitin, a process for its preparation and its use.

The lectins of mistletoe (Viscuin album) in the last two decades have become increasingly important.

Known mistletoe lectins consist of two disulfide-linked chains (A and B), and work in low concentrations of both immunostimulatory and cytotoxic effects on different cell systems.

For the A-chain has been determined that it inhibits the RNA N-glycosidase activity, the protein synthesis; realizes the B-chain with carbohydrate binding activity of the cell contact.

Detailed studies have shown that leaves and other tissues of the mistletoe lectins contain three (H. Franz (1991) in Advances in Lectin Research, Franz, H., ed) vol.
4, 33-50, Springer Verlag Berlin Heidelberg New York).

Mistletoe lectin I (ML I) is a dimer with two [ASSB] pairs, lectin II (ML II) and lectin III (ML III), however, monomeric RIP in the second type are
At present, the use of mistletoe lectin I is preferred.

The standardization of therapeutically used mistletoe extracts has previously not possible.

Surprisingly, now another lectin was found, which can be classified due to its structure and specificity in the group of chitin plant lectins.

Preferably, a new chitin agglutinin.
It is called Viscum album agglutinin or VisalbCBA chitin, which was isolated from the European mistletoe.

The novel lectin is a dimeric protein composed of two identical subunits of 10.8 kDa.

Surprisingly, it differs totally from the other previously described lectins ML I, ML II and ML III.

So it has carbohydrate-binding specificity to oligomers of acetylglucosamine and shows sequence homology to chitin plant proteins, such as the Bohnenchitinase, the Nessellektin domain 1 or similar.

The new lectin is characterized by the N-terminal amino acid sequence of IDH RCGRE ATPPG KLCND GRCCS QWS.

The isolation and purification of new chitin lectin by known methods by a combination of classical protein extraction techniques and affinity chromatography.
In a first step, the type 2 RIP lectins ML I, ML II and ML III are separated, and subsequently carried out by affinity chromatography on a Chitinsäule the final cleaning of the novel lectin.

The thus prepared lectin is not glycosylated, soluble in water and acetic acid.
Furthermore, it is an extremely stable protein at pH values ??between 1 and 12 and is characterized by heat resistance.

Due to its high stability, VisalbCBA suitable for use in medical preparations.

The invention therefore also concerns the use of new chitin lectin.
It is particularly appropriate as cytotoxic agent used with conventional pharmaceutical excipients and additives.

It was also found that the lectin affects the immune system, where it exerts a direct effect, but also indirectly through interactions were with the immunomodulator ML I. Thus, in combination with ML I found synergistic, additive or antagonistic effects.

Then the invention of exemplary embodiments will be explained in more detail:

Example 1

Isolation of a chitin mistletoe lectin

1 kg leaves and twigs of mistletoe (Viscum album L.) are homogenized in 10 l of 20 mM acetic acid with a Waring blender.

The homogenate was filtered and centrifuged (8,000 g for 10 minutes), the supernatant is decanted and filtered through glass wool (to remove the floating particles).

After addition of 1.5 g / l CaCl 2 with 1N NaOH, the extract is adjusted to a pH 9.0 and held for 3 hours at 2 ° C.

The precipitate is separated by centrifugation (3,000 g for 10 min) removed and the clear extract is adjusted with 1 N acetic acid to pH 3.0.

After standing overnight in a cold room, the extract was centrifuged again (3,000 g for 10 minutes) and the supernatant is filtered through filter paper (Whatman 3MM).

The filtrate is dissolved in an equivalent amount of distilled water and applied to a cation exchange column (10 cm x 5 cm, 200 ml volume) of S Fast Flow (Pharmacia, Uppsala, Sweden) equilibrated with 20 mM acetic acid.

After loading the proteins, the column with 2 liters of 20 mM sodium formate (pH 3.8) is washed and the bound proteins were eluted with 500 ml of 0.5 M NaCl in the same buffer.

To eliminate the type 2 RIP lectins ML I, ML II and ML III, the desorbed protein mixture is subjected to the S Fast Flow column following affinity chromatography on a galactose-Sepharose 4B and fetuin-Sepharose 4B.

Thus, the partially purified protein fraction with 1 N NaOH to pH 7.4 and is set to a column (10 cm x 2.6 cm, about 50 ml) with galactose-Sepharose 4B applied, which is eliminated in ML-I.

After passing through the protein fraction of the column with 200 ml of PBS (phosphate buffered saline).

The ML-I-free fraction and the washed solution to a fetuin-Sepharose 4B column (10 cm x 2.6 cm, about 50 ml) was added for removal of ML II and ML III.

The unbound proteins (which are free of ML II, ML II and ML III) are the first 200 ml of PBS wash solution and combined on a chitin column (20 cm x 2.6 cm, approximately 100 ml - Type C-7170, Sigma brought).

Unbound proteins are removed by washing the column with PBS until the A280 fell below 0.01.

At the end of the lectin was desorbed with 20 mM acetic acid and then either dialyzed against PBS and stored at -20 ° C until his use or dialyzed against water and lyophilized.

Example 2

Analytical gel filtration of the purified lectin

The analytical gel filtration of the purified lectin, called VisalbCBA is, as on a Pharmacia Superose 12 column, the 10 mg / ml of a mixture of N-acetylglucosamine oligomers (to prevent binding of the lectin to the column), using PBS running buffer carried out.

Since the analogue of chitin lectins hevein domain are composed of the M r of the new mistletoe lectin using wheat germ agglutinin (34 kDa) and Nessellektin (M r 8.5 kDa) was determined as marker proteins.

In the following, the N-terminal amino acid sequences of chitin VisalbCBA and some vegetable proteins, composed of the corresponding domains are compared.

Cysteine ??residues (found in italics) were not identified, and that is positive, since this instability on underivatized PTH-cys are due.

However, dehydroalanine, a typical beta-elimination product of cystine was observed in all the relevant compounds.

The sequences of hevein, and Nessellektin Bohnenchitinase were from Broekaert, WF et al, (1990) Proc. Natl. Acad. Sci. USA 87, 7633-7637; Beitema, JJ, and Peumans, WJ (1992) FEBS Lett. 299, 131-134 and Broglie, KE et al (1986) Proc.

ibid., 83, 6820-6824 removed.

Identical amino acids are marked with *.
EMI5.1

Example 3

Analytical detection of VisalbCBA

The Lektinpräparationen were by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) using 12.5 to 25% (mass / volume) Acrylamidgradienten gels according to Laemmli, UK (1970) Nature 227, 680-685 analyzed.

Example 4

Agglutination

The specific Agglutinationsaktivität was determined using untreated and treated rabbits and human (type A) erythrocytes.
The agglutination assays were held in small glass vessels with a final volume of 0.1 ml containing a 1% suspension of red blood cells and 10 mu l cross or Lektinlösungen extracts.
The agglutination was visually inspected after one hour at room temperature.
VisalbCBA agglutinated untreated and trypsin-treated red blood cells of rabbits at concentrations between 2.5 mu g / ml and 10 mu g / ml.
When using human erythrocytes, the value was 3 times as high (5 mu g / ml and 30 mu g / ml).

The carbohydrate-binding specificity of lectin was determined using the agglutination of Haptenhemmungsassays Kaninchenerythrocyten with glycoproteins, such
As thyroglobulin, fetuin, asialofetuin and ovomucoid and series of simple sugars.

Table 1 shows the carbohydrate-binding specificity of VisalbCBA:

Table 1
EMI6.1
IC50: concentration, the trypsin-treated, a 50% inhibition of agglutination of rabbit erythrocytes at a lectin concentration of 20 mu g / ml causes.

Example 5

Stability testing

To evaluate the stability of chitin lectin VisalbCBA the effects under adverse conditions and some proteolytic enzymes were investigated.

The use of proteases such as trypsin and chymotrypsin do not affect the activity of the lectin. It was completely stable in a pH range of 1 to 12. Moreover, it proved to be extremely resistant to heat. About 50% of Agglutinationsaktivität remained after cooking the Lektinlösung in PBS for 5 min.

Example 6

Cytotoxicity

Investigations of the cytotoxicity of the new lectin in comparison to ML I, ML II and ML III were performed using Molt-4 cells.

The result is shown in Table 2 below:

Table 2

Survival rate of all cells in% Lektinkonzentration (ng / ml)
EMI7.1

As Table 2 indicates, the novel lectin VisalbCBA has a toxic effect at concentrations above 100 ng / ml, this is lower than that of ML I, ML II and ML III, but it can thus certainly be regarded as a cytotoxic agent.

Example 7

Influence the immune system

VisalbCBA causes the release of cytokines TNF-alpha and IFN-gamma-j from peripheral mononuclear cells from healthy blood donors at concentrations> 90 ng / ml.