Lili Kolisko Institute
For Anthroposophic Medicine

The Nutritional Significance of Lightroot™, a Dioscorea Supplement

"This plant, the dioscorea batatas, has the unique ability to store Light Ether in its roots; and this Light ether will be indispensable to people in the future."-- Rudolf Steiner

Can Light be "stored"?
How does Inner Light affect our Health?
Can the rhythmic strength of the circadian clock be supported?

(There are a number of Dioscorea based products on the market that are manufactured such that Rudolf Steiner's indications are taken into account. The True Botanica Company formula is called Lightroot™.)

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Summary of Health Applications-

(Surprisingly all three fields of applications are in complete unison with one another)

- ✓ General spiritual and energetic benefits of an active light ether:
  - Strengthens the cognitive functions
  - Strengthens memory
  - Improves intellectual work
  - May assist in seasonally dependent depression
  - Focuses mind over matter (i.e. the Will), and Meditative Work
  - Supports a healthy "Light metabolism"
    - Helps overcome cultural and environmental stresses that diminish the circadian rhythms
    - Supports a healthy kidney, lungs, adrenal gland (and cortisol) metabolism
  - Lightens the mood
  - Lessens tendency toward inflammation
  - Supports a healthy eye sight
  - Supports a healthy rhythmic digestion
  - Helps overcome the deleterious effects of electromagnetic smog
- ✓ Chinese medicine suggested uses for dioscorea batata[1]:
  - Spleen and stomach yin tonic- with symptoms such as diarrhea, fatigue, spontaneous sweating, and lack of appetite
  - Lung tonic – with symptoms such as chronic cough or wheezing due to lung deficiency
  - Kidney tonic -- for symptoms such as frequent urination, vaginal discharge, or premature ejaculation, all due to kidney energy weakness
  - In general it is used whenever the problem is "leaking of fluids" -- in addition to the symptoms mentioned above also for night sweats when exhaustion is the primary problem
  - "Brightens the intellect" and prolongs life
  - Together with other herbal compositions in hyperthyroidism, nephritis, and diabetes
  - Applied externally to ulcers, boils and abscesses
- ✓ Modern research in animal models:
  - Confirms a Potent Anti-Inflammatory Role of dioscorea batatas in the treatment of allergic conditions through the suppression of mast cells
  - Confirms improvement in memory and cognition
  - May enhance bone strength and minimize osteoporosis in hormonally deprived females

Introduction

WE HAVE A LIGHT DEFICIT!

Most of us work all day in artificially lit rooms; eat the meat of animals that have been kept in the dark; ingest medications that have been synthesized from "dark" coal derivatives, instead of taking in natural substances that originate from the sun-drenched flowers and fruits and much, much more. Even worse is the lack of "inner light". This is where the Lightroot™, a dioscorea cultivar, can help.

The dioscorea batatas, Lightroot™, was characterized by the spiritual researcher Rudolf Steiner as having the unique ability to store light ether in its tubers and make it available to the human organism when ingested. Rudolf Steiner specifically mentioned that this light ether would be indispensable to the people of the present day. That the health and normal functioning of the human body is closely related to environmental light is beyond dispute but it seems to need an inner "conversation partner" or it cannot operate properly. One of R. Steiner's major insights is that the human body actually produces original light in some of its organs. But this spiritual process needs help in its turn. It is this cooperation of the inner with the outer light that is crucial.

Light 'enlightens". No wonder that in traditional Chinese medicine dioscorea is said to "brighten the intellect and prolong life".

(Patients are certainly known to heal faster and more lasting if they are recuperating in bright sunny rooms.)

Light is also the central determining factor of the circadian clock. It is its primary Zeitgeber[2] or "time-giver". No wonder that a healing herb that essentially brings light into the organism is so significant. But light does not just give rhythm, start and stop hormones and other physiological events. Even simple botanical observations show that plants have an increased cell division in the night but get their structure and strength in the sun light. [2]

Light gives structure!

Suddenly it makes more sense to remember that the Chinese medical tradition ascribes an astringent quality to the dioscorea, an ability to "keep it all together" as it were. These are nothing more than hidden light qualities.

We are only barely beginning to scratch the surface of the benefits coming from the Lightroot ™.

The fact that modern scientific research adds further details in the same direction is all the more astonishing.

Description of the Plant

The dioscorea batatas, also known literally as Mountain Herb in Chinese, can grow wild in the hills and in the valleys but has also been cultivated agriculturally on large fields for human consumption. It is a winding, climbing, perennial plant with long tubers that can grow several feet straight down into the earth. The flowers of the plant are either male or female, and both male and female plants must be grown if seed is required. The flowering time is from July to September. The leaves are placed opposite one another. The small white flowers have a pleasant scent of cinnamon. The plant is hardy to zone five.

The yam is a climbing plant that supports itself by twining around the branches of other plants. It can be grown successfully into small bushes or, perhaps simpler when grown as a root crop, can be grown up a frame in a similar manner to growing runner beans.

The inside of the tuber is white. The tuber can be sliced and cooked. It has a pleasant flavor reminiscent of potato. The slices can be added to soups or fried, mashed or grated. The root contains about 20% starch. 75% water, 0.1% vitamin B1, 10 - 15 mg% vitamin C. There is some confusion over the correct name for this species. One report says that D. batatas is an invalid name that is often erroneously applied to two distinct species D. opposita and D. japonica. The Flora of China accepts D. batatas as a synonym for D. polystachya.

The "Light Metabolism" and the Circadian Clock

It is clearly understood, but little heeded, that the human body responds acutely and profoundly to light impulses from the environment.

Any attempt to interfere with an established 24 hour day/night cycle (i.e. travel across many time zones, shift work change, etc) will result in profound disturbances in the healthy physiology-jet lag, decrease in hand eye coordination, and more.

The pathways along which these influences happen are better understood today. Light travels into the eyes and is conducted from the rods and cones of the retina via specialized nerve fibers to the back of the brain, the visual cortex.

Other completely different nerve fibers lead from the retina to a relay station above the hypothalamus, called the

suprachiasmatic nucleus (SCN). These anatomical findings might explain why even for a lot of blind people the circadian clock can be set by the light and darkness cycle. It is believed that while light impulses cannot travel to the visual cortex, enough of the light impulses can reach the SCN so that the 24 hour rhythm cycle is maintained. From here impulses are transmitted into the rest of the body to all appropriate organs. Ultimately, these messages influence specific genes in the cell nucleus that begin processes that are in sync with the 24 hour cycle. One can look at the genetic mechanisms as a physical means to store light. Every cell in the body seems to have a built in relationship to the 24-hour day/night cycle although all these clocks are synchronized in order to allow the body to function in a harmonious manner. However, in essence every single cell is programmed to have a deep connection to light. [2]

Amazingly, the Light built itself the substrate to work in the physical body. Substances such as the dioscorea batatas that can carry light ether into the human organism help us to respond in a stronger way to light, thus regulating the circadian clock, supporting its rhythmic function and all the organs that depend on it.

Incidentally, there seem to be many more light receptors in the body that are currently still poorly understood. As an example, in 1998 researchers from Cornell University Medical College reported that a shift in the human circadian system could be invoked by light stimulation of the region in the back of the knee. The phase shift was said to be comparable to those obtained by stimulating the eye. However, unfortunately these findings have not been able to be duplicated by other workers in the field.[3]

John Palmer[3] points out that more than 100 years ago the discovery was made that the output of the kidneys were rhythmic. At first it was thought to be due to the fact that people do not drink or eat while sleeping, however, after the turn of the century it was found that the rhythm in urine volume persisted even when people were kept in bed all day and made to fast or behave identically all through the day and night. Clearly the kidneys received messages related to the day/night cycle.

Amazingly, operations in rats have shown that even beyond that, the success of kidney transplants from one animal to another depends on the time of day when the operation is done.

The rodents are darkness adapted animals so it is perhaps not surprising that the animal receiving a kidney transplant at night survived for three weeks as opposed to the rats where the operation was performed in the daytime and who rejected the transplanted kidney in less than four days and died as a consequence of that process. [4]

Each organ has its own living clock. This could be seen in a study of 25 people who received a kidney transplant from another person and experimental data showed that after

a while each kidney would operate according to the rhythm of the person from where they originated![5]

Most physiological processes in the body are connected to the 24 hour day/night cycle. [3]
Examples are given below:
1 AM start of most spontaneous labor
2 AM best the sleep
3 AM lowest blood pressure
3 AM peak of skin repair;
4 AM most common natural childbirth
4 AM lowest body temperature
5 AM dreaming most intense; cortisol secretion greatest
6 AM insulin secretion highest
7 AM rise in blood pressure greatest of the day; angina pains, heart attack, and strokes most likely; testosterone highest in men; sexual desire highest in males
8 AM melatonin secretion turned off
9 AM bodyweight lowest
9 AM peak urinary volume
10 AM peak mental performance
2 PM best eye hand coordination
4 PM peak lung function (defined as largest amount of air exchange per minute)
3-6 PM if healthy this is the best time to exercise
7 PM body temperature peaks
8 PM alcohol best tolerated; track and swimming performance best
9 PM blood pressure begins to decline; melatonin secretion starts

Equally, pathological processes have their highs and lows in the 24-hour cycle: [5]
1 AM gallbladder attacks flare most
2 AM most common time for heartburn and epileptic attacks
2 AM congestive heart failure symptoms peak
4 AM night-work errors peak
4 AM cluster and migraine headaches start
4 AM asthma attacks most severe
5 AM peak risk of auto and truck crashes; toothache starts
6 AM hayfever and cold symptoms greatest;
7 AM rheumatoid arthritis symptoms greatest;
8 AM nosebleeds most common
9 AM depression worse
12 PM stomach ulcers rupture most frequent
4 PM tension headache peak
6 PM fibromyalgia pain highest; osteoarthritis symptoms greatest; multiple sclerosis fatigue worse; cholesterol levels increase
8 PM backache pain worse
9 PM menopausal hot flashes most frequent
11 PM highest reactivity to asthma triggers
11 PM allergic responses begin to increase; restless leg syndrome worst
12 PM skin irritability and itching peaks

Again, the question is can the 24-hour day night cycle be "stored"? Doubts about the reality of this statement were removed in an elegant experiment done at the University of Geneva.[5] It was first shown that a line of fibroblasts (connective tissue cells) that had been cultured for 30 years essentially in the dark, could be made to show a 24-hour pattern of gene expression. The lead researcher was able to induce this 24-hour cycle of expression by simply treating the cultured cells with serum. In some poorly understood manner ingredients in the serum were capable of initiating a 24-hour oscillation of gene expression in the cells. This rhythm flattened out after a while but it could be induced once again with a further serum shock. This, and later experiments on liver and heart cells unquestionably determined that body cells are individually able to have a 24-hour cycle and that all body clocks can be coordinated to give the overall patterns that are physiological in the body.

Disturbing the circadian clock and its consequences

Flying across time zones and suffering jet lag is a well known consequence of disturbing the circadian rhythm.
An even more widespread and negative influence on the day/night cycle is changing or rotational shift work.[4] The practice of alternating among three shifts at weekly intervals is tantamount to jetting across 6 to 12 time zones in the blink of an eye. It is estimated that 20% of the active industrial workforce is involved in shift work. Immediately after an eight hour shift change, productivity decreases and accident rates increase. It is estimated that in the United States shift work related deaths and injury account for about $1.5 billion annually. In addition to such negatives as a poor quality product and increased accident rate are worker absenteeism, common employee turnover and increased illnesses. Exhausted workers do poor work, complain more about the job and lack creative energy for both work and at home. Marital breakups in families with children are increased three-fold or greater if the wife works at night and six-fold greater when the husband does so.
In an animal experiment, this trend was confirmed by the observation that when blowflies were subjected to a six hours shift of the ambient light/dark cycle once every week their lifespan was reduced by 20%.
Being able to introduce a light force stabilizing herb into the body can potentially restore the light/darkness rhythm and give one more explanation why traditionally the dioscorea plant was known in Chinese herbal medicine to “prolong life”.

Anthroposophical Aspects on the Light Metabolism and the Light Ether

(The following comments presume some familiarity with the anthroposophical spiritual research of Rudolf Steiner.)

One doesn't usually talk about "light metabolism" in the scientific parlance of today. Its importance becomes obvious when one considers that R. Steiner calls the etheric or life body also the LIGHT BODY. Clearly without light there would be no life. Even more important than water, plants would not be able to manufacture organic substance without light and without plant products there would be no animals and humans.

However, the central aspect that is missed by conventional science is that no stimulus from the outside can be processed in the body without a specific spiritual activity taking place inside of us. No light could be used if there would not be a “light ether” that is taking it up on the inside. In fact when there is a disturbance in the body either affecting the eyes, or due to medications, or toxin overload, etc, environmental light can be downright poisonous. Photosensitivity in many conditions such as lupus is well known. Light of course invigorates both our body and soul. Too little of it is recognized as a cause for depression, lack of vitamins, especially vitamin D, and more. A balance is absolutely needed. The outer light is needed but the “inner light” is crucial as well.
According to R. Steiner when thoughts are looked at spiritually they appear as formations of light. As we will see below memory is actually, according to spiritual scientific research, a recalled reaction to changes in the light ether. In fact one of the most important spiritual exercises that Rudolf Steiner gives for esoteric development is to train oneself to "see" in one's imagination the after image, the complementary colors, of an impression received on the outside. A great help for this exercise is keeping in mind that of the three primary colors--blue, red, and yellow--the complementary color to anyone of the three mentioned will always be a combination of the other two. For example the complementary color of red is the combination of blue and yellow which is green. "Seeing" the complementary color is a training for activating and perceiving the inner spiritual light that works in unison with the outer light.
Light gives structure. During the night plants have a higher cell division while during the daytime under exposure to sunlight more structure, definition, and consistency are formed. The same relative principle applies to the well-known phenomenon that mountain plants are more "defined" while plants living in the watery moist areas have largely a tendency to "flow apart". This insight may give valuable indications for a lot of the health phenomenon seen today. It is not difficult to imagine that a lack of "inner light" manifests itself outwardly in a tendency to obesity and inflammation. Ultimately, the same lack of the ability to maintain the light processes might be contributory to the widespread occurrence of macular degeneration in the older population. This may also be an explanation why nearly 100% of the population in the northern and moderate geographical earth zones have an established lack of vitamin D and why the recommendations for the daily intake of vitamin D needs to be constantly adjusted upwards. Without a proper "light metabolism" the transformation of the precursor of vitamin D to its active D3 form cannot take place properly.

The necessity to have nutritious plants that have a higher affinity to the etheric world was one of the main reasons that led Rudolf Steiner to give the indications for a new form of

agriculture known by the name of biodynamic agriculture. Among its many changes are a radically new form of organic sprays that are used, for example finely ground quartz that is sprayed during hot summer days on wheat fields in order to help the grain to retain more warmth and light ether. It would lead too far in the context of this paper to discuss in more detail all the substances in the body that are related to light ether processes such as phosphorus magnesium quartz etc., but it will be done in a different context in the future. One of the most important discoveries made by Rudolf Steiner (see the quotes below) is that the human organism has not only the ability to work with light but to actually produce light de novo. But in order for these processes to happen spiritually they need to have the assistance of proper nutrition and of proper spiritual activities in a proper environment. We begin to see here the tremendous importance of Rudolf Steiner's observation that the dioscorea plant can carry light ether in its tuber.
Below will be given several of the innumerable sources relating to Rudolf Steiner's research into the light and the light ether.

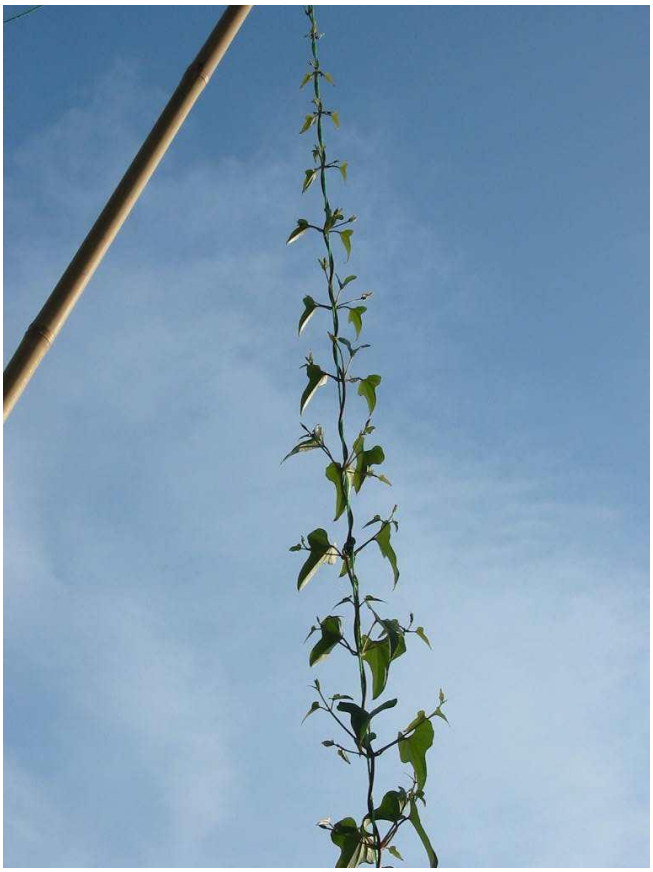
Rudolf Steiner's Comments on the Light Ether

Rudolf Steiner's comments on the dioscorea batatas
Rudolf Steiner's comments central to our considerations here were made in the early 1920s possibly in connection with the agricultural course given in June of 1924. This course led to the founding of the biodynamic (Demeter) agricultural movement. At that time one of his students asked if once all the changes were made in the manner of growing crops as he had suggested would that would be sufficient to help mankind in the most comprehensive way. Surprisingly Rudolf Steiner added that no, it would still be necessary to cultivate plants like the dioscorea batatas, a plant that he characterized as growing in China and having the unique ability to store light ether in its roots. It would have to be acclimatized in the West. In a separate conversation Rudolf Steiner drew a curve that started high up in the East, moved horizontally across Europe and then turned downwards underground as it reached America in the West. He said that these were the light ether powers (not the sun's rays). They came in more strongly from the cosmos in the East, where plants would take them up. In central Europe these powers moved into a direction horizontal to the ground, and in the West they went below ground down into the depths, becoming electricity. People would need these food plants that could take in more light ether and so it would be necessary to acclimatize these plants in Europe. [6]

“This is a nutrition problem." [7]
One of Rudolf Steiner's students, Ehrenfried Pfeiffer, shares an interesting conversation that he had with him after the agricultural course in 1924. The question was whether one

should first make detailed experiments of the new agricultural methods before introducing them openly to the world. This was answered by R. Steiner in the following manner: "It is particularly important for the whole world that the blessings of all of the fertilizing preparations are spread over large land areas so that the Earth can be healed and the nutritional quality of the fruits of the fields be improved to a considerable degree. That's where one should pay one's main attention. The experiments can come later." Apparently he was hoping that his proposed changes for the new methods would be applied immediately.

One understands the above words better when one keeps in mind the background on which these comments were made. In this conversation Rudolf Steiner had pointed first of all to the necessity of an esoteric deepening by people and had commented on the deficiencies that existed within the entire spiritual movement. Pfeiffer, as a follow-up then asked: "How come Dr. Steiner, that in spite of your numerous indications regarding the esoteric path so little of spiritual impulses is manifested in the individual people and how come that spiritual manifestations are realized so poorly in them? Especially, how come that in spite of the theoretical understanding, the will to deeds, the successful carrying through of the spiritual impulses into the physical world is so weak?" Pfeiffer was particularly concerned to obtain an answer to the question how a bridge could be built to the deeds, to active working and carrying out all those spiritual intentions without being distracted by personal vanity, illusions and jealousies. These were three negative qualities that had been mentioned by Rudolf Steiner as essential blocks on the path to higher knowledge. Next came the memorable and surprising answer: "This is a nutritional problem. The way nutrition is constituted today it does not give people anymore the strength to make the spiritual manifest in the physical. The bridge from thinking to willing and acting cannot be built anymore. The nutritional plants do not have any more the forces that they should have and be giving to people." This was consequently a nutritional problem whose solution would give people again the possibility to make the spiritual manifest in them and in the world. On the background of these comments it is understandable why Rudolf Steiner wanted the blessings of biodynamic fertilizing preparations to be spread on farms such that the earth and people could be healed.[5]



From a lecture of November 9th 1923:

Metabolic processes ultimately result in the burning of carbon to carbon dioxide. This carbon dioxide is of course largely being breathed out through the lungs but in the process the physical events are accompanied by a subtle etheric event. Carbon is not only being burned to carbon dioxide but in the process of its burning it actually forms light ether which according to Rudolf Steiner ascends into the head, the senses and the nervous system and makes it

possible for the human being to receive cosmic thought impulses and more. This light ether also must continually permeate the eyes so that we may see and so that we may receive from the outside the outer light ether. Thus we are indebted to carbon for the supply of light ether within us which enables us to come into contact with the outer light ether.

From a lecture of April 12th 1921

The etheric body of man is formed of four ethers: the warmth-, light-, chemical-, and life ether.

The light and warmth ether stream more from the head down towards the rest of the organism, while the life and chemical ethers circulate more from below, from the metabolism, upwards. Light ether has a more organizing, drying, structuring quality while the ethers coming from below are more softening for the organism and imbue it with functioning.

From a lecture on March 24th, 1920

Rudolf Steiner discusses the subtle processes of the transformation of light when it reaches the skin, the natural border that man has between the outer world and himself. At the moment of crossing this border a metamorphosis of light occurs. This means that man not only transforms the common, "ponderable" (heavy) processes of external nature within himself, but also the "imponderable" elements -- Light itself. He changes it into something different. We must pay particular attention to this: the human being by the very fact of being human has a continuous supply of stored and transmuted light within. That is necessary to his organization. If the mutual process enacted between man and the external sunlight does not take place properly his body is deprived of the transmuted light, just as, in the case of emaciation, the body loses fat which it needs. And in such cases man faces the dilemma of either forcing his upper body to become diseased or of depriving his lower body of what it needs. All this results from being deprived of transmuted light.

To re emphasize: the human organization needs not only ponderable substances, derived from the external world and but also transformed imponderable, etheric substances that result from this metamorphosis. These basic principles show how one can handle the requirements for light. On the one hand we can expose the human being directly to the sunlight. This will satisfy the need for environmental light. But on the other hand we must administer internally substances that remove the deficit of transmuted light.

From the lecture of March 31st, 1920

In this lecture Rudolf Steiner makes perhaps one of the most unusual revelations that are the result of his spiritual research. He explains that one of the most crucial differences between the human and the animal organization consists in the fact that the human being has the ability to be "a creator, or producer, of original light!" This light creation occurs particularly in relationship to the transformation of carbon to carbon dioxide and takes place primarily in the kidney organization. These inner light processes need to work together with the influence of the external light. In the eye organization this working together occurs in closer cooperation, while in other areas the external light has to be kept apart from the internal one. Essentially, however, the role of the external light is to stimulate the production of the original new etheric light on the inside of the organism.

From the lecture of April 3rd, 1920

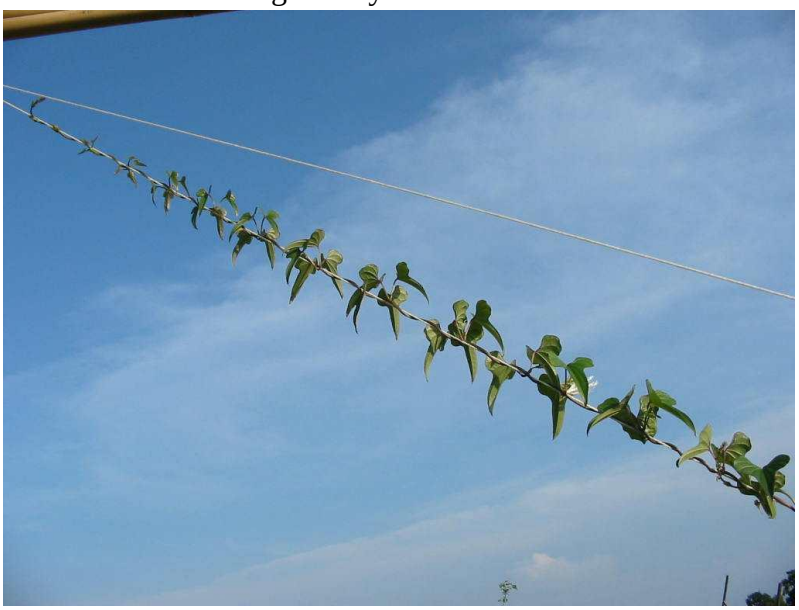
The lectures of March and April of 1920 were given as part of a course for physicians. It is rather surprising to see the introduction that Rudolf Steiner gives to the various lectures. At one point he remarks that he has been told from very competent people that these would be the most difficult lectures that they had ever heard. Rudolf Steiner confirms that yes the details given in these lectures are not easy to digest.
In the present lecture he is introducing it with a comment that sometimes people accused him of presenting a confused and inaccurate spiritual science but other times the complaint has come back that due to the straightforward matter in which he presents spiritual realities he is betraying ancient mystical secrets. In these words one begins to get a sense for the importance of the spiritual insights that he is giving about the physiological functioning of the human body. In this particular lecture he describes how the vision, the eye organization, is actually prolonged inside the body in the form of a scaffolding that the human ego has to hold together at all times. This scaffolding can dissipate and cause fragments to remain in the etheric body, a process which ultimately results in the well-known phenomenon of inflammation.
One can see from these remarks the importance of maintaining in the body a proper eye organization, related to the light ether, which as we have repeatedly come to understand is responsible for a lot of structure and order in the organism.

From a lecture on January 2nd 1916
"…Let us think of the human etheric body as it is connected with the physical. Let's recall that the etheric body naturally consists of four different kinds of ether…We recognize these as consisting of warmth ether, light ether, chemical ether (by which the music of the spheres is communicated) and life ether.
Let us turn our attention to the light ether. It is true that the whole etheric body consists of an inner blend -- an inwardly organized blend of the four kinds of ether, but we shall only consider today that part of the ether body which is light ether…
Now I have often said that man really only gains consciousness of things from being actually within them with his ego and soul being. It is in the daytime, when we are awake that the astral body and ego are within the physical and ether body. One may add, only as regards that part of them which is not within the outer things. Keeping this in view we say that we have sense perceptions. The cause of this is that the human ego and astral body first receive a revelation of things, and this revelation, which remains unconscious, is then reflected on the instruments of the senses and their nerve extensions in the physical body. This has often been explained.

Now we shall inquire today: how does memory come about? How is it that we have remembrance of many things, of objects and experiences that we have passed through? How did it come to pass that we have memory?

Take this case. We meet a man today, whom we first saw five days ago. We remember that we saw him five days ago, that we spoke with him that he told us his name. We say: we recognize this man. What is it that really takes place in us when we thus remember a man and our former meeting with him?

This is what occurs: the first thing we have to take into consideration is this, that when we met the man five days ago our etheric body experienced certain movements. It is the light part of the etheric body that we are now considering; of course, the other members of the etheric body -- the warmth, chemical and life parts also vibrate in sympathy, but it is the light part that we are considering today; I will speak of it therefore as the light body. Our etheric body, then, experienced certain movements, for the thoughts evoked by the man whom we met, revealed themselves within our light body as movements -- as inner light movements; so that apart from our having perceived the man with our senses, we received the impression (not communicated through the senses) that gave rise to movements in our light body. Thus the whole result of our meeting with the man consisted in our light body experiencing all kinds of movements. Picture this vividly to yourselves. While you stood before the man and spoke to him, your etheric Light body was in continual movement. What you said to him, what you felt and thought regarding him, is all disclosed in the movements of your Light body. When, several days after, you see this man again, the fresh sight of him stirs your soul, and this movement causes your etheric body, purely because of its laws of continuity, to reproduce the movement experienced five days before, when you met the man and exchanged thoughts with him. Very well, we encounter this man again after five days. The etheric Light body, stirred by this meeting, experiences again the same movements which it did at the first meeting; and because man is always with part of the astral body and ego in the outer ether, he feels the movements which stirred the outer ether, and thus because of its law of continuity (or persistence) he again becomes aware of what he experienced previously. We have really to picture to ourselves, that during the waking state we are both with our ego and astral body within the outer light ether; sleep only consists in that part of the astral body and ego, which during the day, when we are awake, is within the physical and etheric body, also with going into the outer ether.



Remembrance is this: the perception from the outer ether of inner etheric movements; the perception from the outer light ether of movements in the inner Light body: this is to remember.

Suppose for example that you see two men meet each other. Perhaps the one merely sees the face of the other but because of this certain movements arise in his etheric body. Then

he goes away. The etheric body retains the tendency to repeat these movements if it is stirred to do so. Five days later these two men meet again. They perceive each other, the one whose Light body made the movement is aware of the other and his Light body is stirred to make the same movements which it made when he saw the other's face before. This is expressed in his consciousness when he says I have seen the face before. That is: consciousness perceives the inner movements of the light ether from the outer light ether. This is remembrance purely as an act of perception. We can say: in the external light one perceives the movements taking place in the inner Light body. But we do not see them as light movements. Why do we not see them thus in ordinary life? We do not see them as light movements, because this light ether body is seated within the physical body, and therefore the movements of the light ether body impinge everywhere on the physical body. Through these impacts the light movements of the etheric body are transformed into memory pictures. These light movements are not perceptible. It is only through what the memory presents to us through contact with the physical body that we are aware of them.

When the physical body is not there, that is when the body has passed through the gates of death the ego and astral body are naturally at first far more intensely within the outer ether, till after a few days they leave the outer ether. The inner Light body is then no longer stirred by impacts on the physical body to conceptions that are only possible in the physical body. Therefore the dead see everything that they have experienced which the etheric body, now freed from the physical body and no longer restrained by it, throws off and allows to pass before it. During the first few days after death man sees everything pass before him; for the etheric has the tendency continually to repeat and to reproduce from within itself all those movements which the experiences of the physical body had at one time aroused in it. The man's whole life passes before him, set in motion by the vibrations of the ether body. It is being projected as a mighty picture -- one may say that all the etheric movements reflect, as in a panorama, the life just passed on earth.

If it were possible for us always so to control the physical body, if we could make ourselves independent of it -- -- not letting it disturb us -- that the etheric body also was set free (as can be done by certain meditations, connected with the process described in my book Knowledge of the Higher Worlds) it might be that even in life we might see, not the result of memory -- not what arises through the impact of the etheric body on the physical body, but the actual swayings and movements of the etheric body itself. We should be then in the outer ether and look at the movements of our Light body…."

From a lecture of March 22nd 1913

During the esoteric development one can learn gradually to eliminate sense impressions. If one succeeds to completely remove the sense of seeing, if one truly does not use one's sight then one becomes aware of the light ether that continually comes into the body and builds the physical eye. They organize the physical eye structure.

Traditional Chinese Medicine

Chinese yam is classified as a neutral and sweet tonic. The main uses are summarized above. It is used in many combinations with other herbs. [1,8]

Modern Research on the dioscorea plant

The roots of most, if not all members of this genus contains diosgenin. This is widely used in modern medicine in order to manufacture progesterone and other steroid drugs. This aspect is not of importance in the function of the roots discussed here. Lightroot™ has not been standardized for diosgenin and contains only negligible amounts.
The research mentioned here is important for the more general properties of the plant unrelated to diosgenin. [9]

Study: Ethnopharmacological relevance- Plants that belong to the genus Dioscorea have long been used as edible tuber crops in many tropical and subtropical areas and as a traditional herbal medicine in oriental countries including China, Japan and Korea. In this study, in vivo and in vitro tests were carried out to evaluate the cognitive enhancing effects of $CHCl_3$-soluble extract from Dioscorea opposita against scopolamine-induced amnesic mice and glutamate- and H_2O_2-treated cortical neurons of rats. Materials, methods and results: Acute treatment (200 mg/kg body weight, orally) and 10 days' daily administration (50 mg/kg body weight, orally) of $CHCl_3$-soluble extract showed significant spatial learning and memory improvement on mice. Furthermore, the neuroprotective effects on glutamate- and H_2O_2-induced neurotoxicity in primary cultured cortical neurons of rats were assessed. Pretreatment with the extract was found to impart significant protection against neurotoxicity. Conclusions: These in vivo and in vitro results suggest that the Dioscorea opposita has neuroprotective effects on memory related neurodegenerative diseases.[10]

Study: The aim of this study was to evaluate the effect of a diet rich in dioscorea yam tuber material on the learning and memory ability of 2-month-old male senescence accelerated mice (SAMP8). The mice were fed with three different diets for 12 weeks; a casein diet (control group) and either a casein diet supplemented with 10% lyophilized or with hot-air dried yam. Results of passive and active shuttle avoidance tests showed the mice fed with the diet containing yam had significantly better learning and memory ability than the control group. The thiobarbituric acid-reactive substances (TBARS) in the hippocampus of the group fed lyophilized yam were significantly lower than the control and also the group fed a diet containing hot-air dried yam, whereas the spongy degeneration and the lipofuscin percentage tended to be lower but not significantly different. It was suggested that lyophilized yam was more effective than hot-air dried yam in reducing the lipid peroxidation, brain pathological changes and the deterioration in the learning and memory ability in mice possibly because lyophilized yam contains more antioxidant compounds.[11]

Study: In Western industrialized nations in particular depression is an illness that seems to occur ever more frequently. It is a complaint that can be treated very promisingly by Chinese medicine provided that the entire potential for treatment offered by Chinese medicine is made use of, following careful Chinese diagnosis taking account of the

somatic as well as the psychic symptoms. The author provides details of two impressive case histories.[12]

Study: The bioactive polysaccharides (named ZPF1) from yam (Dioscorea batatas) were chemically determined, suggesting repeating beta-1,4-mannan as mainly having a feature of acetylation on C2-OH and C3-OH, around 28%. The ZPF1 participated in the stimulation of murine wild-type macrophages predominantly in tumor necrosis factor-alpha (TNFalpha). Toll-like receptor 4 is proved to be one of the cellular receptors in ZPF1-mediated TNFalpha secretion. Reactive oxygen species transmission and PI3-kinase are found necessary for regulating TNFalpha secretion by ZPF1 stimulation. Moreover, we found that extracellular signal-regulated kinase 1/2, Jun N-terminal kinase 1/2, and p38 mitogen-activated protein kinase play important roles in the regulation of TNFalpha secretion in ZPF1-stimulated macrophages.[13]

Study: Methanolic extracts of seven herbs (Acorus calamus, Acorus gramineus, Bupleurm facaltum, Dioscorea batatas, Epimedium koreanum, Poria cocos and Zizyphi jujuba) used in traditional Korean medicine for improvement of memory and cognition in old age were tested for cholinesterase inhibitory properties using the Ellman colorimetric method. The possible bases for the reputation of these and the other herbs tested are discussed in the light of previous investigations into their chemistry and biological activity.[14]

Study: Dioscoreae Rhizoma (MDR), the root of Dioscorea tokoro MAKINO, has been used for the treatment of arthritis, muscular pain and urinary diseases in oriental medicine. The present work evaluates a methanol extract of Dioscoreae Rhizoma (MDR). MDR did not show any cytotoxic effect on mouse lung fibroblast cells (mLFCs) or human fibroblast-like synovial cells (hFLSCs). However, it significantly reduced the proliferation of hFLSCs stimulated by interleukin-1beta (IL-1β) and tumor necrosis factor-alpha (TNF-α). MDR significantly inhibited the production of TNF-α and IL-1β as well as down-regulating the expression of cyclooxygenase-2 (COX-2) and inducible nitric oxide synthase (iNOS) in IL-1β- and TNF-α-stimulated hFLSCs. MDR also effectively reduced the level of reactive oxygen species (ROS) in these cells. Taken together, these findings provide evidence that MDR may be a candidate for the treatment of rheumatoid arthritis (RA).[15]

Study: Dioscorea batatas Decne (DBD) is used to heal various disorders of the kidney and lungs as an herbal agent in Korea. The purpose of the present study was to determine whether the DBD glycoprotein regulates the inflammatory reaction stimulated by phorbol-12-myristate 13-acetate plus calcium ionophore A23187 (PMACI) in human mast cells (HMC-1). The results indicate that DBD glycoprotein decreased gene expression of interleukin (IL)-1β and cyclooxygenase (COX)-2 in PMACI-stimulated

HMC-1 cells through blocking of phosphorylation of p44/42 mitogen-activated protein kinase (MAPK) and p38 MAPK and DNA binding activities of nuclear factor (NF)-κB and activator protein (AP)-1. The production of intracellular reactive oxygen species (ROS) and nitric oxide (NO) is gradually reduced by concentration-dependent DBD glycoprotein treatment in PMACI-stimulated HMC-1 cells. Hence, the hypothesis is proposed that DBD glycoprotein can serve as a potent anti-inflammatory agent in the treatment of inflammatory allergic diseases through inhibition of inflammation-related signal transduction in mast cell activation.[16]

Study: This study was aimed to investigate the disposition and pharmacokinetics of the total saponins of dioscorea (TSD) in rats. Male Sprague-Dawley rats were orally administrated with 3H labeled TSD at a single dose ratio of 80 mg TSD per 1 kg rat. Blood samples and feces were collected at different time points to measure the level of TSD activity. At the final time point, determination of the disposition of TSD in lung, kidney, heart, liver, adrenal, and small intestine were performed. From the blood samples' emission of radioactivity, pharmacokinetic parameters were derived as $T1/2 = 33.33 \pm 4.48$ h, $Tmax = 6.5 \pm 0.71$ h, $AUC = 119400 \pm 421097.67$, and $Cmax = 2643.33 \pm 192.26$ dpm/ml. There was 51.609% of 3H labeled substance excreted in 24 h. These results suggested that blood concentration of 3H-TSD was extremely low and the majority of TSD was excreted in the feces. The TSD was extensively distributed to multi-tissues. The radioactivity level was measured to be the highest in the liver, adrenal gland, and wall of the gastrointestinal tract. The radioactivity of TSD was still being detected in blood after 96 h. This showed TSD was excreted in vivo very slowly.[17]

Study: According to energetic theory the kidney is in charge of the bones and the mechanism of bone metabolism. Tonifying kidney prescriptions for osteoporosis have effective action, but the action mechanism of meridian tropism deserves further researches at molecular biology levels. Objective: To investigate the correlation between the meridian distribution of a prescription for tonifying the kidney and the expression of transforming growth factor-beta 1 (TGF- β 1) mRNA of target organ in experimental osteoporosis. Design, time and setting: A randomized control animal experiment was carried out in the Basic Laboratory of Integrated Chinese Medicine and Western Medicine, Hebei Medical University (Shijiazhuang, Hebei, China) between January 2004 and December 2007. Materials: Seventy healthy female SD non-copulated rats of 3 months old and clean grade, aged (300±20) g, were selected and fed with low calcium forage. Osteoporosis models were established by intramuscular injection of dexamethasone. The prescription for tonifying kidney comprised rehmannia glutinosa, epimedium grandiflorum, dioscorea opposita, salvia miltiorrhiza, and drynaria pubescens Maxim. Methods: SD rats were randomly divided into 7 groups: normal control group, pathological model group, prescription group, kidney meridian sticking group, urinary bladder meridian sticking group, ipriflavone administration group, and non-meridian or acupoint sticking group with 10 rats in each group. Except the rats of the normal control group were given common feed and drank freely, all the others were induced the models of osteoporosis. Then, rats in the prescription group were treated with 8 g/kg the prescription for tonifying kidney by gastric perfusion. Rats in the ipriflavone group were

administrated with 10 mg/ kg ipriflavone by gastric perfusion. Rats in the normal control group and pathological model group were treated with the saline of the same volume every day by gastric perfusion. The Chinese herb plaster was stuck at the Shenshu (BL 23) and Feiyang (BL 58) of urinary bladder meridian in the urinary bladder meridian sticking group, at the Taixi (KI 3) and Dazhong (KI 4) of kidney meridian in the kidney meridian sticking group, and at the non-meridian or acupoint of femoribus internus muscle in the non-meridian or acupoint sticking group, alternated from left to right, once a day. Main outcome measures: After 16 weeks of continual administration, serum follicle stimulating hormone, luteinizing hormone, thyroid stimulating hormone and progesterone levels were determined. The lumbar vertebra bone mineral density was detected by dual energy X-ray absorptiometry, and the expressions of TGF- β 1 mRNA by reverse transcription-polymerase chain reaction. Results: All 70 rats were involved in the result analysis. Compared to the pathological model group, serum follicle stimulating hormone, luteinizing hormone, thyroid stimulating hormone, progesterone levels and the bone mineral density of the prescription group, kidney meridian sticking group, urinary bladder meridian sticking group, and ipriflavone group were significantly increased after 16 weeks of the administration ($P < 0.01$). Moreover, the expressions of TGF- β 1 mRNA were significantly up-regulated in those groups ($P < 0.01$). Conclusion: The prescription for tonifying kidney displays meridian tropism by oral administration and sticking approaches. The mechanism may be related to the up-regulated expression of TGF- β 1 mRNA in the target organs.[18]

Study: The aim of this work was to determine the effects of oral administration of dioscorea on the morphometric and mechanical properties of the femur in ovariectomised (OVX) rats. Female Wistar rats that had undergone surgery for ovariectomy were used as a model of menopause and osteoporosis. Four weeks after surgery the animals were given oral dioscorea (0, 250, 750 or 1500 mg/kg−1 day−1) for 27 days, then the porosity, mineral fraction, stiffness and toughness of the femur and the ultimate force needed to break the femur were measured. RESULTS: Ovariectomy resulted in an increase in the total volume, dry weight and porosity but a decrease in the mineral fraction of femora. Subsequent chronic administration of dioscorea reversed the effect on porosity and increased the ultimate force of the femur in OVX rats but did not affect the bone properties of sham-operated rats. CONCLUSION: These results suggest that chronic administration of dioscorea may enhance bone strength and provide insight into the role of dioscorea in bone remodeling and osteoporosis during the menopause. However, the benefit is not clear for the reproductive female.[19]

The Lightroot ™ formula- some distinguishing characteristics

Most of the wild yam, dioscorea, offered commercially is of a rather watery quality, not the sort of consistency one would expect from a light ether carrying plant. The intrinsic qualities of the dioscorea must be amplified by proper growth methods in order to obtain the desired results. The True Botanica Company uses a very carefully cultivated dioscorea plant grown biodynamically in Wisconsin, USA. The plant is cultivated in fields that are far from electrical disturbances since strong electromagnetic forces are known to weaken the light forces..

High trellises allow the plant to unfold maximally towards the Sun- as is its natural tendency.
The tubers have been encouraged to grow straight and deep in the manner corresponding the natural streaming of light. It is this particular plant cultivar then that has been trademarked under name of Lightroot™.
Included in the final product formulation are also the ashes of the tuber, a distinguishing feature of many True Botanica products containing roots. The ashes are not only the depository of many minerals and trace elements but they, according to Rudolf Steiner, carry, because of the burning process itself the Sun forces that have contributed to the growth of the plant into the root itself. .
Finally, a number of Potencies of the Lightroot™ tuber have been included into the final supplement. They are in a harmonic relationship to one another and through the rhythmic process ensure even more that the entire product will be effective on both the body and the spiritual mind functions.

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