

**Condensed from:**

***Pau d Arco***  
***An Ancient Herb,***  
***A Modern Miracle***

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Abstract

**Throughout the width and breadth of the earth there exist plants which, when used with wisdom, have the amazing ability to cure or prevent cancer, infections, the common cold, in brief, the ills of mankind.** They grow and blossom and concentrate valuable healing nutrients within their tissues. It is the obligation of animals and people to discover these properties and utilize them in the manner intended by the governing and organizing principles of nature. The search does not begin nor end in a research laboratory. It begins with the experimentation of simple people living close to the earth, who invest nothing in their search save the desire to live healthy, prevent sickness and cure disease. It ends when the rest of the world accepts knowledge so gained, and incorporates it into their own health system.

The need for scientific examination results in the accumulation of interesting and sometimes useful data; at its best it opens new avenues for effective application of the wisdom of the ancients. At its worst, it asks the wrong questions, obtains the wrong answers, becomes puffed up by its own importance, and gets in the way of man's quest for the discovery of nature's healing gifts.

Science and folklore need not clash. When they do, it is usually because the wrong questions were asked, the wrong answers obtained, the wrong materials examined, the wrong people involved. Pau d'Arco currently finds itself in the middle of worldwide confusion. As data showing the efficacy of Pau d'Arco accumulates in some areas of the world, other areas continue to ignore basic sources of information; data gathered in such a vacuum disappoints the mind and obstructs progress.

We prefer to believe that Pau d'Arco, given enough time, will emerge into the full light of day, even from the dark and muddling laboratories of the United States, and will take its rightful place as one of the great healing herbs of the world. We prefer to believe that until then the herb will be immune to the dealings of dim and uninspired regulatory proceedings on bright continents. We prefer to believe that, in the end, the millions of Pau d'Arco users will prevail.

# Pau d Arco, A Gift of the Incas

Dr. Mowrey of the Mountainwest Institute of Herbal Sciences, in Salt Lake City, Utah, has analyzed literally hundreds of scientific papers. From this work he has put together a booklet entitled, *Into the Light*. In it, he explains the meaning behind the research that has been published concerning the anticancer, antiviral and other properties of the South American herb known as Pau d'Arco or Lapacho. Much larger volumes have been written about the empirical data that Dr. Mowrey has collected from around the world on the almost unbelievable properties of this plant. However, our chief concern is with the experimental, medical and clinical data that bears a more certain scientific aura. Toward this end, this condensed version of Dr. Mowrey's work has been published.

One of the last, great, but largely untapped, reserves of natural resources on the face of the earth is South America. The herbal medicines that abound on this continent have been largely denied to the rest of the world; the inaccessibility of the great forests, combined with a general lack of interest, have kept the secrets of the region shrouded in darkness. Africa is a continent of light by contrast.

Efforts to increase the availability of South American herbal remedies have been extremely arduous and difficult. Only with great effort are we able to bring together all the resources necessary to successfully identify, harvest and export such plant materials. Much material coming into the U.S. from its southern neighbors has been falsely identified, or adulterated, or harvested incorrectly. Rare is the importer who even knows what to look for.

Nowhere have these difficulties been more apparent than in the marketing of Pau d'Arco. Pau d'Arco (*Tabebuia avellanedae*, & *Ti impetiginosa*) comes from the rain forests and mountains of Paraguay, Argentina and Brazil. We have known about this plant for almost 100 years, yet efforts to import medicinally active Pau d'Arco have failed more than they have succeeded. In spite of the difficulties, the interest remains extremely high, because this plant holds great promise for the effective treatment of cancers such as leukemia, candida and other troublesome infections, debilitating diseases (including arthritis), as well as a host of other complaints.

Anyone familiar with the recurring ginseng and goldenseal fiascos will appreciate the similar state of affairs that exists in the business of Pau d'Arco. In fact the chances of obtaining good quality ginseng and goldenseal in American health food stores are greater than the odds of obtaining good quality Pau d'Arco. A vast majority of commercial Pau d'Arco is void of significant activity. The reason is primarily lack of quality control at every stage of the enterprise; gatherers, unaware as to which parts of the plant contain the active material, harvest all parts of the plant; curers, unaware of the traditional Pau d'Arco curing practices, make assumptions that are more often wrong than right; shippers pay little attention to protecting the material from the hazards of transportation; manufacturers, unaware of what constitutes really good Pau d'Arco (having never bothered to go to South America and have a look),

don't have any idea how to set up quality control or standardization practices that guarantee activity.

You must exercise extraordinary care in your purchases of Pau d'Arco, and buy only when you have ascertained the expertise of the manufacturer. Generally speaking, the best Pau d'Arco will be obtained from manufacturers specializing in this herb.

## DESCRIPTION

Pau d'Arco is an evergreen tree, with rosy colored flowers, belonging to the Bignonia family. Nearly 100 species of Pau d'Arco trees are known, but only a few of these yield high quality material, and it takes extremely skilled gatherers to tell the difference.

(Half or more of the battle involved in bringing high quality Pau d'Arco to the marketplace is finding and retaining qualified gatherers.) The medicinal part of the tree is the bark, specifically the inner lining of the bark, called the phloem (pronounced floam). The use of whole bark, containing the dead wood, naturally dilutes the activity of the material. Pau d'Arco is also known by tribal names such as Taheebo and Ipe Roxo.

Some texts distinguish between Pau d'Arco colorado (red Pau d'Arco) (scarlet flowers) and Pau d'Arco morado (purple Pau d'Arco) which grows in cooler climates such as high in the Andes, and high places in Paraguay. Recent evidence suggests that these two varieties of Pau d'Arco possess superior medicinal properties, with a slight bow going to the purple as the best of all.

## CONSTITUENTS

Most of the chemical analyses of Pau d'Arco have been performed on the heartwood of the tree, rather than on the phloem, or inner lining of the bark, which is used medicinally. It is unclear why this has occurred. One reason may be that the heartwood contains enough quantities of a couple of important constituents, mainly Lapachol and tabebuin, to satisfy current research interests. Once the therapeutic activity of those constituents has been thoroughly investigated, perhaps researchers will turn their attention to the phloem. Until then, it is probably safe to assume that the living bark contains a similar set of active constituents as the heartwood plus some others that make it more effective and would account for the living bark's greater popularity as a folk medicine. Traditionally, as anyone who chooses to examine the herbal literature of the world can verify, it is the living bark of a plant, especially a tree or shrub,



that is used medicinally—not the heartwood. The reason is simple: the nutrients and representative families of chemical substances used to sustain the life of the tree are found in greatest concentration in the cambium layer and phloem of the living bark.

The life processes of a mature tree are carried out in the thin corridor lying between the outer bark and the inner heartwood. Pull the bark off a tree and you will notice moist, very thin layers of tissue that seem to shred when picked at with the hands. This is the cambium layer. Its purpose is to create new tree tissues, such as phloem, through cell division. The newest, youngest phloem cells are just outside the cambium. As new phloem is added, older cells are crushed and pressed into the bark. Younger, newer cells added to the inside of the cambium layer are called xylem. Newer xylem is called sapwood; older xylem is crushed and pressed into the heart of the tree. It is therefore known as heartwood. The actively conducting tissues of a tree are the thin layers of fresh xylem and phloem on each side of the cambium.

The outer bark and heartwood are, essentially, inactive materials that only serve to provide strength to the tree. Indiscriminate combining of older, less active layers of bark and tree with the younger, living tissues results in a dramatic dilution of active principle and medicinal value. Yet it is a common practice.

Lapachol is just one of a number of plant substances known as naphthaquinones (N-factors) that occur in Pau d'Arco. Anthraquinones, or A-factors, comprise another important class of compounds. The N-factors are not common except in herbal tonics. Seldom do both N- and A-factors occur in the same species. Several of the remarkable properties of Pau d'Arco may be due to a probable synergy between A- and N- factors.

Quercetin, xloidone and other flavonoids are also present in Pau d'Arco; these undoubtedly contribute to the plant's effectiveness in the treatment of tumors and infections.

### **FOLKLORE**

The native Indians of Brazil, northern Argentina, Paraguay, Bolivia and other South American countries have used Pau d'Arco for medicinal purposes for thousands of years; there are indications that its use may actually antedate the Incas. Before the advent of the Spanish, the Guarani and Tupi-Nambo tribes, in particular, used great quantities of Pau d'Arco tea. In the high Andes, the Callawayas, the Quechua, Aymara and other tribes used Pau d'Arco ("Taheebó" to them) for many complaints.

The Indians apply Pau d'Arco externally and internally for the treatment of fevers, infections, colds, flu, syphilis, cancer, respiratory problems, skin ulcerations and boils, dysentery, gastrointestinal problems of all kinds, debilitating conditions such as arthritis and prostatitis, and circulation disturbances. Other conditions have reportedly been cured with Pau d'Arco including lupus, diabetes, Hodgkins disease, osteomyelitis, Parkinson's disease, and psoriasis.

It is used to relieve pain, kill germs, increase the flow of urine, and even as an antidote to poisons. Its use in many ways parallels that of the immuno-stimulants Echinacea on this continent and Ginseng in Asia, except that its action appears to exceed them both in terms of its potential as a cancer treatment. The Guarani, Tupi and other tribes called the Pau d'Arco tree "Tajy," meaning "to have strength and vigor," or simply, "The Divine Tree."

Modern Guarani Indians prefer the purple Pau d'Arco, but also use the red Pau d'Arco. And they use only the inner lining of the bark.

The use of Pau d'Arco may not be limited to tropical countries. A Yugoslavian scientist, Voislav Todorovic, claims that he has found evidence that the plant was used by the Vikings and the Russians. He also claims that a Russian chemist (in the late 1800's)

manufactured a toothpaste that contained Pau d'Arco that was supposed to have been extremely effective in preventing tooth decay.

### **EARLY SCIENTIFIC WORK**

Research on Pau d'Arco has been going on for a long time. E. Paterno isolated the active constituent, Lapachol, in 1884. In 1896, S.C. Hooker established the chemical structure of Lapachol, and L.F. Fieser synthesized the substance in 1927! So it would be a mistake to call Pau d'Arco a modern discovery.

As early as 1873, physicians were aware of the healing action of Pau d'Arco. Dr. Joaquin Almeida Pinto wrote during that year, "Pau D'Arco: Medicinal Properties: prescribed as a fever-reducer; the bark is used against ulcers; also used for venereal and rheumatic disorders and especially useful for skin disorders, especially eczema, herpes and the mange. Another early physician, Dr. Walter Accorsi, reported that Pau d'Arco, "eliminated the pains caused by the disease (cancer) and multiplies the body's production of red corpuscles."

However, the science of Pau d'Arco began properly with the work of Theodoro Meyer in Argentina who tried for decades with little success to convince the medical world of the value of Pau d'Arco for infections and cancer. Data from his laboratory are astounding in terms of the success rate observed when applying the herb in dozens of different kinds of cancer. Much of Meyer's work was primitive by modern research standards; most of it lacked adequate controls and statistical evaluation. But the sheer bulk of it is good evidence for the efficacy of Pau d'Arco. The Meyer era ended at his death in 1972, with the scientific world left still largely unconvinced of the usefulness of Pau d'Arco as a modern medicinal agent. Perhaps the most important thing Meyer accomplished, from a scientific point of view, was to bring Pau d'Arco to the attention of the rest of world, to extract the plant from the jungles of the Amazon, and announce, "Here is a folk remedy with great promise for all mankind."

Independent of Meyer, a physician in Brazil, about 1960, after hearing a tale of its miraculous curative powers, used Pau d'Arco to treat his brother who was lying in a Santo Andre, Brazil hospital, dying of cancer. His brother recovered, and the physician, Dr. Orlando dei Santi, began to use the herb to treat other cancer patients at the hospital. Other physicians joined the team, and after a few months, several case histories of cures were recorded. In the typical case, pain disappeared rapidly and sometimes complete remission was achieved in as little as four weeks.

Because of the work at the Municipal Hospital of Santo Andre, Pau d'Arco has become a standard form of treatment for some kinds of cancer and for all kinds of infections in medical establishments throughout Brazil. It should be noted that after the first reports of "miraculous" herbal cures appeared in Brazil, the national government ordered a blackout of any more public statements by doctors involved in the research. The silence was finally broken by Alec De Montmorency, who in 1981 published a lengthy review of the ongoing clinical work in Brazil. This report succeeded in stimulating worldwide interest in the plant.

In 1968, Dr. Prats Ruiz of Concepcion, Argentina, successfully treated three cases of leukemia in his private clinic. Some of these results were widely published and also helped to establish the popularity of Pau d'Arco among the "civilized" inhabitants of South American countries.

American physicians, of course, tend to look disparagingly upon the clinical evidence from backward areas of South America, preferring instead sanitized evidence from their own brightly lit laboratories. The weight of the South American clinical evidence has not been sufficient to cause widespread acceptance of the treatment outside South America, but it has stimulated research

interest abroad. Pharmaceutical companies regularly screen Pau d'Arco for the presence of substances that could be the basis for new drug applications. As we shall see, however, no isolated component of Pau d'Arco comes anywhere close to being equal to the combined activity of all constituents, or, in other words, to the whole herb.

**Drug Detox Observations.** A common thread that runs throughout early and current empirical and clinical reports of Pau d'Arco treatment is the consistent observation that the herb eliminates many of the common side effects of the orthodox medications. There is no explanation of this action, but it is so often seen that one cannot easily doubt its validity. Pain, hair loss and immune dysfunction are among the symptoms most commonly eliminated

### MODERN INVESTIGATIVE WORK

While scientific research on Pau d'Arco has been going on for decades, most of it is worthless from a medicinal point of view. Some of it, however, is very good, and has resulted in the isolation of several individual medicinally active constituents and in the analysis of their properties. The current interest in AIDS has stimulated renewed interest in Pau d'Arco since the herb is such an effective antiviral substance.

The main problem with American research on the plant is the tunnel-vision with which the work is engaged. Without any understanding of the ultimate source of the plant's effectiveness, researchers routinely isolate what they think should be the active component and apply it in standard screening trials. The results of such research are sometimes positive, sometimes negative, sometimes strong, sometimes weak—always inadequate, by definition. It didn't surprise anyone that the trials performed by the National Cancer Institute were less than convincing. And it also didn't surprise anyone when that same institute rejected out-of-hand the highly positive results obtained by many non-American researchers who utilized different methods. The self-serving tendency of the American medical/regulatory establishment to accept only its own research is indulged by the rest of the world's scientific community with polite and somewhat amused patience, as they wait for America to grow up.

The following is a summary of some of the effects of Pau d'Arco and/or any of its constituents that have been validated by modern research:

**1. Laxative effect.** Regular use of Pau d'Arco will maintain regularity of bowel movements. This property is undoubtedly due to the presence of the naphthaquinones and anthraquinones. Users of Pau d'Arco universally report a pleasant and moderate loosening of the bowels that leads to greater regularity without any unpleasant side-effects such as diarrhea.

**2. Anticancer effect.** The greater part of the basic research on Pau d'Arco, both in the United States and in other countries has dealt directly with the cancer question. Obviously, this issue is of great importance. Any tendency of Pau d'Arco to ameliorate the course of cancer should be made known to all persons likely to benefit from it. The absence of side effects makes Pau d'Arco a treatment of choice even in conjunction with standard forms of therapy. The user has nothing to lose and much to gain from the judicious use of Pau d'Arco. Naturally, any and all treatment of a cancerous condition should be done under the supervision of a qualified physician.

Some constituents or groups of constituents of Pau d'Arco have indeed been found to suppress tumor formation and reduce tumor viability, both in experimental animal trials and in clinical settings involving human patients. In addition, anecdotal data abounds to

such an extent that to overlook its importance is to turn one's back on a potentially invaluable source of aid and health. Leukemia has proven particularly susceptible to the application of Pau d'Arco and several of its constituents. Some researchers feel that Pau d'Arco is one of the most important antitumor agents in the entire world.

*I had a large tumor in my brain. Traditional treatment produced only minor success. Then I began to use Pau d'Arco tea. After several weeks a CAT scan showed that the tumor was totally gone. The doctors couldn't believe it because they had classified my case as basically untreatable.*

Part of the effectiveness of Pau d'Arco may stem from its observed ability to stimulate the production of red blood cells in bone marrow. Increased red blood cell production would improve the oxygen-carrying capacity of the blood. This, in turn, could have important implications for the health of tissues throughout the body.

**3. Antioxidant effect.** In vitro [outside the body] trials show definite inhibition of free radicals and inflammatory leukotrienes by Pau d'Arco constituents. This property might underlie the effectiveness of Pau d'Arco against skin cancer, and definitely helps to explain observed anti-aging effects. Modern science has recently uncovered the importance of free radicals in the generation of many debilitating diseases, from cancer to arthritis. These molecules are even heavily implicated in the normal aging process. Reversing their action has become big business in world health circles. Antioxidants, or free-radical scavengers, have emerged as premier candidates for the role of healers and disease-preventers. Among the antioxidants few have greater potency than Lapachol and other constituents of Pau d'Arco.

**4. Analgesic effect.** The administration of Pau d'Arco is consistently credited in reports issuing from South American clinics as a primary modality for lessening the pain associated with several kinds of cancer, especially cancer of the prostate, liver or breast. Arthritic pain has also been relieved with Pau d'Arco ingestion.

**5. Antimicrobial/anti-parasitical effects** includes inhibition and destruction of gram positive and acid-fast bacteria (*B. subtilis*, *M. pyogenes aureus*, etc.), yeasts, fungi, viruses and several kinds of parasites. Two troublesome families of viruses inhibited by Pau d'Arco are noteworthy: Herpes viruses and HIV's. Together, these viruses account for much of the misery of mankind. The anti malarial activity of Pau d'Arco spawned a great deal of research interest in the early decades of this century. A 1948 article reviewed the progress and indicated that the N-factors, especially Lapachol, were among the most promising anti malarial substances known at that time. Pau d'Arco's immunostimulating action is due in part to its rather potent antimicrobial effects.

*I began using Pau d'Arco about 3 mos. ago. I immediately experienced a surge of energy... within half-an-hour I was up dancing which is pretty amazing considering I've got MS and spent most of the Spring in a wheelchair. Within 2 days I noticed a lessening of pain and muscle spasms which was fantastic... my urinary, bowel and digestive functions have vastly improved... There is no doubt that the MS has greatly improved with the herb as I quit using it for a week and all the old symptoms returned. I start the Pau d'Arco again and they subside., I've repeated this scenario three times.*

**6. Antifungal effect.** Pau d'Arco is often singled out as the premier treatment for Candida or yeast infections. Lapachol, N-factors and

xyloidone appear to be the primary active principles. By the mid 70's the list of N-factors that inhibited *Candida albicans* and other fungi had grown to several dozen.

It would be misleading to categorically state that the N-factors in Pau d'Arco have proven antimicrobial and anti fungal activity in and of themselves. Studies have shown that the manner in which they occur in the plant must be taken into consideration. We know, for example, that anti fungal activity is lost when the N-factors are tightly bound to highly water-soluble or highly fat-soluble groups. It has not been clearly determined how the N-factors occur in Pau d'Arco.

N-factors, obtainable from various chemical supply companies, have become favorite testing agents in government/university labs due to the rise in yeast infections resulting from increased use of cytotoxic drugs, cortico steroids, antibiotics and immuno suppressants.

An interesting application has been reported in which toe and finger nail fungi infections are relieved by soaking these appendages in Pau d'Arco tea off and on for a couple of weeks.

**7. Anti-inflammatory.** The anti-inflammatory and healing action of Pau d'Arco extracts was demonstrated in a study in which purple Pau d'Arco extract was administered to patients with cervicitis and cervico-vaginitis, conditions resulting variously from infections (*Candida albicans*, *Trichomonas vaginalis*), chemical irritations and mechanical irritation. The Pau d'Arco extract was applied intra-vaginally via gauze tampons soaked in the extract, and renewed every 24 hours. The treatment proved to be highly effective. One wonders what might happen were the tampon method combined with the ingestion of strong dosages of Pau d'Arco.

The anti-inflammatory action of Pau d'Arco might also account for its observed tendency to reduce the pain, inflammation and other symptoms of arthritis. Anecdotal accounts of complete cures are even available. As yet virtually untested in research settings, the purported ability of this plant to reduce symptoms of joint disease may be ultimately validated and added to the growing list of benefits to be enjoyed by the daily ingestion of Pau d'Arco.

*I recently had a violent MS. attack I lost my balance, lost vision in my left eye and had excruciating pain in my left leg. I went to bed, took the anti-seizure medication and an analgesic. I took four capsules of Pau d'Arco that day. Within 6 hours I was up stuffing turkey. Usually these episodes lay me up for weeks. I am convinced the Pau d'Arco made the difference.*

**8. Other beneficial effects.** Routine screenings have revealed several minor properties of Pau d'Arco that might occur if needed in certain individuals: diuretic, sedative, decongestant, and hypotensive, to name a few.

*I started drinking the red Pau d'Arco because I had read a testimonial letter that indicated that its daily use had been effective against the pain of arthritis. I was skeptical to say the least. Prior to taking Pau d'Arco, I could not stand on a hard surface for more than 5 minutes because the pain was excruciating in my hip... Since taking the red Pau d'Arco regularly I have been on my feet for two or three hours without pain. Now the doctor tells me the tissues in my hip are regenerating!*

Unfortunately, space limitations preclude a lengthy discussion of all the benefits of Pau d'Arco, but some of the major actions listed above require further elaboration:

## ANTIVIRAL

One of the strongest actions of Pau d'Arco is against viruses. The range of viruses inactivated by Pau d'Arco extends from those that cause the common cold to those that are responsible for AIDS. It has been shown to actively inhibit, kill or stunt the growth of several dangerous viruses, including herpes virus hominis types I and II, polio virus, vesicular stomatitis virus, avian myeloblastosis virus, rous sarcoma virus, friend virus, and rous sarcoma virus. Several other viruses are also inhibited by Pau d'Arco's N- and A-factors.

One N-factor, beta-Pau d'Arcone, inhibits enzymes in virus cells that directly affect the synthesis of DNA and RNA. It is also a potent inhibitor of the enzyme reverse transcriptase, involved in RNA/DNA relationships. Once these processes are inhibited, the virus is unable to take over the reproductive processes of the cell and cannot, therefore, replicate itself and infect other cells. Such inhibition is a characteristic of most substances that are being tested for activity against AIDS and Epstein-Barr. The enzyme in question is a key to the action of retroviruses. These viruses, also known as ribodeoxyviruses or oncornaviruses, have been implicated in the development of several kinds of experimental cancers. Beta-lapachone is obtained simply by treating Pau d'Arco with sulfuric acid, and tests show that it has a unique method of action vis-a-vis the reverse transcriptase inhibition.

*Red Pau d'Arco has made me feel more alert and awake, zesty, and happy, without the harmful side effects of caffeine; (it) increases virility and vigor.*

## ANTI PARASITIC

Pau d'Arco components have been intensively studied in terms of their action against two rather nasty parasites: *Schistosoma mansoni* and *Trypanosoma cruzi*, both responsible for considerable disease and misery in tropical countries. Pau d'Arco was effective against both.

Taken by mouth, Lapachol is eventually secreted onto the skin via the sebaceous glands where it acts as a topical barrier, inactivating microorganisms soon after they contact the skin. Meanwhile, throughout the G.I tract, it is performing the identical function on the mucous membranes, preventing the penetration of parasites. The mechanism of action is not well understood, but is felt to involve the uncoupling of cellular respiration (see Cellular Mechanics Section), the stimulation of lipid peroxidation and super oxide production, and the inhibition of DNA/RNA biosynthesis.

## CANCER

Pau d'Arco has been extensively investigated for potential anticancer activity. Even the National Cancer Institute has gotten in the act, but in their own typical way, they managed to drop the ball before achieving success. They restricted their investigations to the Lapachol component of Pau d'Arco, and once they found that this substance had side effects that offset its potential therapeutic benefits, they abandoned the project. The holistic practitioner readily perceives the fallacy of that approach, and is skeptical of applying isolated herbal constituents. As if in confirmation of that skepticism, research that involved whole Pau d'Arco has produced clinical anticancer effects without side effects.

Animal research in the United States made a gigantic stride forward when it was discovered that Lapachol inhibited solid tumors (Walker carcinosarcoma 256 and Ehrlich solid carcinoma) and Ehrlich ascites cell tumors. Such research then took a gigantic stride backwards when the findings of the clinical toxicity of Lapachol prematurely ended these investigations.

One interesting line of research has shown that Lapachol is more effective when ingested orally, rather than injected into the gut or into the muscles. These results contradict a substantial amount of research on orthodox drugs that indicates the superiority of injectable routes. What is the meaning of this anomaly? Could it be a sign that natural routes of administration (i.e., oral) are better suited for natural substances? This would seem to indicate that the metabolization of natural substances begins in the mouth, thence the stomach, and finally the gut before delivery to the blood stream -- just as most nutritional items do. Direct injection into the gut or the blood stream leaves too many metabolic processes out.

Using the wood of the plant, several researchers have studied the effects of Lapachol, alpha and beta-Lapachone and xyloidone on experimental cancer (Yoshida's sarcoma and Walker 256 carcinosarcoma). As high as 84% inhibition was observed on Yoshida's sarcoma. And no toxicity was found

In one clinical study, South American researchers administered Lapachol to patients with various forms of cancer, including adenocarcinoma of the liver, breast and prostate, and squamous carcinoma of the palate and uterine cervix. Taken orally, the substance resulted in temporary reduction of all conditions and in a significant reduction in pain. Duration of treatment was anywhere from 30 to 720 days, with an average of about two months. For example, one patient with liver cancer presented with a significant reduction in jaundice accompanied by other signs of improvement after eight days of therapy. These results were in close accord with results obtained by the same researchers in animal studies. One wonders what the administration of whole purple Pau d'Arco phloem might have accomplished in this setting; other lines of evidence suggest that even better results may have been obtained.

*During exploratory surgery it was noted that I had ovarian, stomach, intestine & liver cancer. I was told I had approximately 4 to 6 months to live. I made up my mind to fight. I went for chemotherapy, took four capsules of red Pau d'Arco, an ounce of aloe vera juice and took various vitamins daily. After 11 mos. the physicians could not believe what they found (no cancer). I continue to have regular checkups and have proved to be a miracle case.*

A Note on Nausea: In the human study reported above, some patients dropped out of the experiment due to nausea. This is a common observation in some, but certainly not all, people who begin to experience the cleansing action of Pau d'Arco (and other healthful herbs). As toxins (and toxic medicines) and wastes are drawn out of the cells, or flushed out, or physiologically expelled from the cells, through the action of the herb, they tend at times to accumulate in the blood, lymph, lymph nodes, skin, liver and kidneys awaiting the opportunity to be expelled from the body. Backing up, they can, on occasion produce sensations such as nausea; the body may even try to rid itself of some toxic substances by vomiting. Not to worry. These transient signs dissipate once the toxins are moving freely from the body. They are a positive sign that the herb is working. Remember the body only has three basic processes for getting rid of wastes: lower bowel movement, sweating, urinating. The use of Pau d'Arco can so overload these processes in the early stages that discomfort may be produced.

*My wife was dying of cancer. She has a malignant tumor on her temple. The pain was so intense the doctors wanted to keep her sedated in the hospital until she died. We decided not to give up. For three weeks now she has been taking Pau d'Arco. The tumor looks much better; it began draining and no longer looks so angry. The pain is much less, and she can get up and move around the house. Our MD. is impressed!... Now we have hope!*

## CELLULAR MECHANICS

Every cell of the body requires oxygen and glucose to obtain energy for life-sustaining functions. The oxygen and glucose are subjected to a fairly complex metabolic process in the tiny energy producing structures in the cell called mitochondria. This process requires numerous enzymes and coenzymes. The oxygen and glucose are converted to carbon dioxide and water which are then returned to the blood. The carbon dioxide is exhaled by the lungs (hence this metabolic process is often called "respiration"); excess water is eventually drawn off through perspiration or through the kidneys. During this conversion, several free electrons are freed up, which are immediately utilized by another pathway to produce ATP (adenosine triphosphate), the energy currency of the cell—ATP is the molecule every cell is required to utilize, or spend, to obtain energy. The two paths—one for breakdown of glucose, and one for synthesis of ATP—are tightly coupled together. Should they become uncoupled, the cell can no longer obtain energy, and it dies. Such poisoning has acquired the name of "uncoupling of oxidative phosphorylation."

Many agents have been found that uncouple oxidative phosphorylation; many of them resemble the N-factors in Pau d'Arco. In fact, it has been found that Pau d'Arco works like other benzoquinones, i.e., it uncouples the mitochondrial oxidative phosphorylation occurring in cancerous cells, but not in healthy ones. This selective killing (cytotoxicity) of tumor cells is what makes Pau d'Arco such a potentially valuable agent for the treatment of cancer.

One of the games science plays is attempting to discover at what point cellular respiration is broken up by chemical agents. The components of Pau d'Arco seem to interrupt the process at several points, usually by inhibiting an enzyme or coenzyme that is required for the next step in the chain to occur properly. For instance, Pau d'Arco inhibits the proper functioning of ATPase, the enzyme that catalyzes the final step in the formation of ATP.

Lapachol has also been shown to inhibit the amount of another substance required for cellular reproduction: uridine triphosphate. This molecule is the main source of substances (called pyrimidine nucleotides) that are required by cells in order to build DNA, RNA and most other important proteins of the body. Pau d'Arco may actually block the syntheses of pyrimidines in cancer cells (by inhibiting the enzyme dihydroorotate dehydrogenase). The result would be certain cellular death of the cancer cell.

There is also evidence that Lapachol interacts directly with the nucleic acids of the DNA helix in cancerous cells. If such interaction, or bonding, takes place then DNA replication would be impossible. The result is also eventual death of the cancer cell.

Finally, Pau d'Arco constituent beta-Lapachone has been shown to weaken malignant cells, even to the point of cellular death, by stimulating a process known as lipid peroxidation, which produces toxic molecules.

## TOXICITY

While there can be no doubt that Pau d'Arco is very toxic to many kinds of cancer cells, viruses, bacteria, fungi, parasites and other kinds of microorganisms, the substance appears to be without any kind of significant toxicity to healthy human cells. The side-effects mainly encountered, and usually with isolated Pau d'Arco constituents, are limited to nausea and anticoagulant effects and a tendency to loosen the bowels, and diarrhea in very high doses. As indicated earlier, some nausea should be expected as a natural consequence of the detoxification process. The FDA gave Pau d'Arco a clean bill of health in 1981.

Perhaps the most significant study on toxicity was published in 1970 by researchers from the Chase Pfizer & Co., Inc. Looking specifically at Lapachol, these investigators found that all signs of Lapachol toxicity in animals were completely reversible and even self limiting, i.e., over time the signs of toxicity decreased and even disappeared within the time constraints of the study. The most severe kinds of self-limiting side-effects they observed were an antivitamin K effect, anemia, and significant rises of metabolic and protein toxins in the blood stream. The diminution of these signs indicates that Pau d'Arco initiates an immediate "alterative" or "detoxification" effect on the body's cells. Once the cells are "cleaned up," the signs of toxicity disappear. This effect is quite common among herbal tonics.

## HOW MUCH AND WHEN

Pau d'Arco can be used periodically as a preventative during colds and flu season, or whenever the chances for infections are high. Experience has taught that Pau d'Arco is best ingested as a tea, one or two cups a day, morning and evening, OR if specially processed, as 100 to 200 mg. in **capsule** form taken morning and evening. Used in this fashion, it promotes the health of the immune system, helps prevent the onset of colds and flus, keeps the bowel healthy and may impart some of the other important therapeutic effects, including a positive effect on arthritis, pain, localized infection (e.g. candida) and systemic infection.

During periods of acute, active infection, Pau d'Arco should be administered several times a day. It is up to the individual to determine the optimum amount for him or her. It is not uncommon for a person's awareness of his or her personal health needs and requirements to increase dramatically when turning to a health-oriented, herbal approach.

*I was bitten by a brown recluse spider; but didn't know it for 3 days; it was finally diagnosed in an emergency room when the pain and swelling got so bad I couldn't take it any longer. An ointment was prescribed, but I used instead a compress made of two tea bags of Pau d'Arco, changed often. Relief was almost immediate. And, after 3 days, the doctor was amazed by the fact that all swelling and pain had disappeared, and new, healthy, tissue was growing back rapidly*

## CONCLUSION

Throughout the width and breadth of the earth there exist plants with the amazing ability to cure and prevent the ills of mankind when used with wisdom. They grow and blossom and concentrate valuable healing nutrients within their tissues. It is the obligation of animals and people to discover these properties and utilize them in the manner intended by the governing and organizing principles of nature. The search does not begin nor end in a research laboratory. It begins with the experimentation of simple people living close to

the earth, who invest nothing in their search save the desire to live healthy, prevent sickness and cure disease. It ends when the rest of the world accepts knowledge so gained, and incorporates it into their own health system.

The need for scientific examination results in the accumulation of interesting and sometimes useful data; at its best it opens new avenues for effective application of the wisdom of the ancients. At its worst, it asks the wrong questions, obtains the wrong answers, becomes puffed up by its own importance, and gets in the way of man's quest for the discovery of nature's healing gifts.

Science and folklore need not clash. When they do, it is usually because the wrong questions were asked, the wrong answers obtained, the wrong materials examined, the wrong people involved. Pau d'Arco currently finds itself in the middle of worldwide confusion. As data showing the efficacy of Pau d'Arco accumulates in some areas of the world, other areas continue to ignore basic sources of information; data gathered in such a vacuum disappoints the mind and obstructs progress.

We prefer to believe that Pau d'Arco, given enough time, will emerge into the full light of day, even from the dark and muddling laboratories of the United States, and will take its rightful place as one of the great healing herbs of the world. We prefer to believe that until then the herb will be immune to the dealings of dim and uninspired regulatory proceedings on bright continents. We prefer to believe that, in the end, the millions of Pau d'Arco users will prevail.

Numerous references are available, however most of them are in Spanish. If you are interested, please let us know and we can send the list to you.

### *Note on the Text:*

*The material appearing in italic with quotation marks around it, throughout this report, was taken from actual letters in Dr. Mowrey's files. The generic term Pau d'Arco was used in place of brand names.*

## ABOUT THE AUTHOR

Dr. Mowrey is the Director of the Mountainwest Institute of Herbal Sciences, in Salt Lake City, Utah. He is known primarily for his efforts to bring scientific data about herbal medicine to the attention of the American public. Toward this end he has published the books entitled the Scientific Validation of Herbal Medicine, and Guaranteed Potency Herbs: Next Generation Herbal Medicine, which have become standard texts in the field.

**This report is not intended as medical advice. Its intention is solely educational. Please consult a medical or health professional for medical advice.**

Notes: