Treating Herpes Naturally with *Larrea tridentata*

An Effective, Natural Remedy for Herpes Simplex, Shingles, Chickenpox, Kaposi's Sarcoma, and Other Herpes Outbreaks

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HerpesReliefCenter.com

NOTICE

The purpose of this book is to increase your knowledge about a natural remedy for herpes. It is not intended as medical advice and it is not meant to diagnose or treat any individual's health problems. You should not discontinue any course of medical treatment or undertake any new treatment without first consulting your own healthcare practitioner.

TREATING HERPES NATURALLY
WITH LARREA TRIDENTATA

PROLOGUE

My journey into medical botany began when, as a young university professor, I found that my knowledge of plant chemistry could be used to explain how plant natural products affect human health. At first I sought to learn which botanicals were best for enhancing my health and for preventing and treating my own illnesses and those of my family. I soon found that my friends and students wanted the same kind of information. At their behest, I broadened my efforts to seek natural medicines for preventing or treating many human disorders, including cold sores, arthritis, periodontal disease, osteoporosis, cancer, psoriasis, stress, and headaches. My research team and I have now found wonderful natural treatments for many health problems, which work better, cost less, and have fewer side effects than common prescription drugs.

I feel blessed to have a background that enables me to evaluate both the scientific literature and the popular press on natural medicines and to dig out, understand, and explain to the public how and why these medicines work. And I feel especially fortunate to have a research laboratory, where I can examine different botanical products and use this information to advise people on the best choices for their own health.

People should be able to get straightforward answers to such simple questions as, "*Which natural medicines will work for me?"* and "*What commercial brands are reliable for what I need*?" But these answers are not easy to find for people who do not have extensive scientific training and sophisticated laboratory facilities. My role is to provide this service, to bring the best research available on medicinal plants to the public's attention and to lead the way in the evaluation and development of quality products.

Dennis Clark, Ph.D., Tempe, Arizona

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PREFACE

Contemporary society has developed an increasing interest in natural medicine, an interest that accelerated throughout the 1990s and has continued to do so into the 21st century. This renewed interest comes in response to the crisis in our health-care system: as a nation we pay more for our medical care and accomplish less than most other nations of comparable living standards, while health care costs continue to spiral out of control. We are bankrupting our economy by spending nearly a trillion dollars a year on medical treatments that are often inappropriate, ineffective, and unnecessarily dangerous. In spite of this high-cost trend, medical science has yet to discover the critical underlying causes or the appropriate and effective treatments for any of the major human diseases, including cancer, AIDS, heart disease, herpes, Parkinson's disease, Alzheimer's disease, arthritis, and osteoporosis. These failures of modern medicine have given our collective memory a jolt to recall folk remedies that were once widely and successfully used for all sorts of human disorders. Such rediscovered folk medicines have now been evaluated in thousands of clinical and other scientific studies. One such rediscovery, the topic of this book, is the desert shrub *Larrea tridentata*, which has a long folk history in the treatment of many diseases. The following pages provide valuable information about this plant and its importance as a natural remedy for one of the most common and vexing sets of diseases that can afflict people: the group of diseases caused by herpes viruses.

Not a week goes by without several magazines, scientific journals, and newsletters adding to the information overload about natural medicine. The outpouring cannot be ignored. By now everyone from doctors to patients and from insurance companies to the drug industry knows about this growing phenomenon. It is ironic, however, that the older, natural treatments are now referred to as ‘alternative’ or ‘complementary’ medicine, whereas the recent inventions of modern medicine constitute the mainstream. This situation presents the end-user (you, me, and every other individual seeking good health) with a contrast of choices. On one hand, mainstream medicine is extremely highly regulated as to who can train the physicians, who is allowed to practice medicine, which treatments are approved for research and clinical use, which companies can own treatments (that is, patented drugs and devices), and who is allowed to

make and sell the approved products. On the other hand, alternative medicine, to say the least, is much less regulated in all comparable areas. Training varies in quality and quantity for all manner of physicians, some states grant licenses for certain types of practitioners and not others, natural drugs can be prescribed by professionals but not labeled as medicines in retail stores, and treatments must slither around under the guise of nutritional supplements and be regulated more or less as foods.

Okay, so how are you going to decide on a treatment discipline and choose from the protocols that are available within it? You can be like a friend of mine who informed me that she didn't believe in natural medicines (to which I responded that I hadn't heard that this was a religious faith). Or you can be like many of my students in plant biology who claim that natural products are better for you because they are natural (at which point I am always delighted to tell them that strychnine, coniine [from poison hemlock], nicotine, and cocaine are all natural products, too). All disciplines have something good to offer, so your personal assignment is really quite simple: answer the question, "What is most likely to be effective but safe for me?" Initially, your answer has to be based on the prior evidence that evaluates a treatment. This means that you will have to become a bit of a scientist (this isn't so bad – I enjoy being one!) so you can obtain, read, and evaluate published materials before making your decision. This is where I come in, unless you already have access to a university library and the skills for finding and evaluating scientific literature. And this is where this book fills a niche for you, by presenting the information you need for evaluating and deciding on a certain treatment protocol for certain medical problems caused by herpes viruses.

Before moving on, I'd like you to ask the following question of me (because I'm going to answer it anyway): Why I am writing about *THIS* particular treatment for *THIS* particular medical problem? I have many reasons: 1) my professional and personal bias toward natural medicine; 2) my fascination with a plant species that I have seen almost everywhere in the desert southwest and adjacent Mexico; 3) my work for the past 30 years with the types of chemicals that this plant species produces in abundance; 4) the continuing discoveries of the antiviral properties of these kinds of plant chemicals; 5) the serendipitous personal discovery a few years ago by a friend of a friend that an extract from this plant made her

cold sores go away very quickly.

Speaking of friends, several of mine have reviewed this book and have tried mightily to keep me from making it too technical. But I love plant biology and chemistry, and I know a lot about it and feel compelled to share as much of it as I can with anyone who will listen or read about it. So this book represents an uneasy truce between their recommendations for something that is not too detailed and my desire to expound on the science that is near and dear to me. I think that all of the information in this book is important for everyone, and I think that I have made it understandable to non-scientists and scientists alike.

What you will find in this book is information about an excellent natural treatment for herpes outbreaks. There are other very good treatments, some of which are also from natural sources and some of which are synthetic and available by prescription only. And there are plenty of bad treatments. My purpose is to provide you with enough information about one treatment so you can compare it with information about others and make a well-informed decision regarding your own health. May all of your healthcare decisions be well-informed ones.

INTRODUCTION

This book describes a powerful natural remedy for herpes infections, which comes from a common desert shrub that goes by the official name, *Larrea tridentata*, and the common name, creosote bush. *Larrea* has an extensive folk medical history among Native Americans and has attracted a great deal of interest from medical researchers over the past four decades because of its past uses in several kinds of human disorders, including chickenpox, digestive disorders, sores, inflammation, rheumatism, venereal disease, influenza, bronchitis, and the common cold. The connection between this list and herpes is evident from the folk use of *Larrea* against chickenpox, which is caused by a herpes virus. The use of *Larrea* against influenza and the common cold suggests that this plant has broader antiviral effects than just against herpes, a notion that is now supported by several recent scientific studies.

Herpes viruses inflict widespread suffering around the world. Nearly everyone will be affected by some type of herpes virus at some time in his or her life. Depending on the individual, some infections will be minimal and some will be drastic, even fatal. And depending on the particular type of herpes virus, the resulting disorder could be oral sores, genital sores, chickenpox, shingles, Kaposi's sarcoma, and Epstein-Barr syndrome, to name only the most commonly known afflictions caused by this family of viruses.

The more that people know about herpes viruses the better off they are when it comes to preventing or reducing outbreaks or treating full-blown cases. Many, many books and articles have been published on this topic, some of which I list in the bibliography at the end of this book. In addition, this book provides some of the most important and basic information that I think everyone should know about viruses in general and herpes viruses in particular. The coverage of viruses is followed by details that you should know about the most commonly used prescription drug for treating herpes. This information is intended as a valuable addition to your personal health arsenal.

The most important question in your mind is probably, "*How do I know that Larrea works?"* After the sections about herpes and other

viruses, you will find the information you need to answer this question. First you will see why *Larrea* is such a remarkable medicinal plant, followed by an explanation of the scientific basis for its use in treating herpes infections and the current medical evidence for its effectiveness.

You will also find a brief section containing directions on where to locate other sources of information about herpes, including telephone numbers, websites, and printed materials, (Appendix A), an explanation of the nettlesome but crucial issue of plant names in medical botany (Appendix B), an extensive list of Native American medical uses of *Larrea* (Appendix C), and a summary of recent U.S. patents that have been granted for the use of *Larrea* in human health (Appendix D).

Scientists such as myself feel obliged to give official credit (or blame) where it is due. This means that we are in the habit of providing a bibliography of the published resources used for background material. In keeping with this tradition (which I believe to be a necessity), I have listed examples from different kinds of resources based on what I think are the most important and most useful sources of further information for you about herpes and about *Larrea*. The list is not complete, but it is representative. Indeed, a complete literature review of herpes would require the evaluation of 3,200 articles that have been published since 1988, and more than 40 books, the first of which came out in 1967.

Now I invite you to read on and find out how *Larrea* can help you and why I am so enthusiastic about this extraordinary plant as a natural medicine that everybody should know about.

A FEW WORDS ABOUT VIRUSES

It is important to know about viruses in general, and herpes viruses in particular, before explaining how *Larrea* fights infections. Then you can better understand the connection between the plant and the herpes type viruses.

Perhaps first and foremost, viruses present a special problem in biology and medicine because they are too simple to be classified as living

organisms, yet they are able to invade living cells and direct the genetic machinery of these cells to reproduce the viruses. Let me emphasize this point: viruses are not living organisms. This means that they cannot be killed. (That's why antibiotics are useless against viruses.) Nevertheless, viruses are completely dependent upon living host cells and are detrimental to them – that is, viruses are parasites. The most obvious harm shows up when the host cells become full of viruses, upon which the cells stop being normal cells and can even burst and die. The bottom line is that, in spite of having so simple a structure, viruses can alter host cells to such an extent that the result to the host is a deadly disease.

Viruses are much smaller than cells, so small that we cannot see them with a regular microscope, nor can we remove them from drinking water with standard household filters. All they are is a small set of genes encased in one or two coats of protein. They can float in air or travel in water vapor, and they are virtually everywhere. Every breath you take in or let out contains viruses. But because viruses are completely parasitic, they are active only when they can invade a living host. Peter Medawar, Nobel prizewinner in medicine, aptly referred to viruses as, "...*piece[s] of bad news wrapped in protein*."

Each type of virus is suited to its own type of host cell. For example, hepatitis viruses prefer the cells of the liver, and herpes simplex viruses prefer nerve and skin cells. The host cell type will often determine which disease the virus will cause.

At this point it may seem scary that viruses cannot be killed because they are not alive in the first place, and that they can invade our bodies and make our cells do their bidding. Do not despair, your immune system will usually come to the rescue. You will learn more about that later, but for now keep in mind that whatever you can do to enhance your immune system will be detrimental to herpes, and whatever you do that harms your immune system will increase your chances of a herpes outbreak.

Since viruses depend on their host cell's metabolism, chemicals that harm viruses are often also harmful to the host cell. It is little wonder that very few virus-fighting drugs have been developed and that most of those are so potent biochemically that they are very toxic (for example, the

supposed anti-HIV drug AZT). So, in spite of all of the sophisticated scientific tools of modern medicine, we are without cures for illnesses caused by viruses, including the common cold, herpes, infectious hepatitis, smallpox, chickenpox, measles, viral encephalitis, mononucleosis, mumps, shingles, influenza, yellow fever, polio, and rabies. (I do not include AIDS in this list, although we have no cure for it, because there is too much doubt in the scientific community as to whether it is caused by a virus.)

Fortunately for us, we are not defenseless against viruses. We and every other living organism on Earth harbor viruses, usually without getting sick from them. We can do this because we have a powerful, virus-fighting immune system. Our immune system works by making virus-neutralizing proteins, called ***antibodies***, which team up with two kinds of cells to destroy viruses: ***lymphocytes***, which stop viral activities, and ***macrophages***, which clear out the leftover debris of deactivated viruses and make room for healthy new cells.

Our bodies are constantly battling viruses with our immunological weapons by making new antibodies for fighting each virus that we encounter. Often we win, and occasionally we lose, but it is always an uneasy balance between us and our tiny 'live-in' parasites.

WHAT ARE HERPES VIRUSES?

The herpes family of viruses consists of more than 80 distinct types of viruses that are found in nearly every kind of animal that has been investigated to date: fish, frogs, birds, cats, dogs, mice, snakes, lizards, monkeys, cows, horses, humans, and more. These viruses are classified together because they all look the same at high magnification in an electron microscope and because they have similar genes. They differ by where they occur, by their immunological effects, and by the amount and composition of their genetic material. The general comments that come with the name of each type of herpes virus in the following discussion give you a thumbnail sketch of that type, but the medical and biological features of these viruses are not so easily categorized. Scientists continue to discover correlations between herpes viruses and an expanding list of human diseases. Ongoing research is trying to find out whether herpes

viruses cause some or all of many diseases, alone or in conjunction with other factors, or whether they occur in a secondary association with other causes. Determining the cause of many such diseases is more difficult than it seems, because so many factors show up together when disease symptoms appear.

Overview of the Nine Types of Herpes Viruses Found in Humans:

Herpes simplex virus - Type 1 (HSV-1; also, Human Herpes Virus-1, HHV-1): fever blisters and cold sores of the face, mouth, and lips are the most common symptoms of HSV-1 outbreaks. Surprisingly, this most infections with this virus occur by two years of age via breaks in the skin barrier around the mouth or elsewhere on the body. While HSV-1 is thought of as the cold sore virus and HSV-2 (see below) is thought of as the genital herpes virus, this distinction often fails. It is well documented in the medical literature but not widely-publicized yet that virus released from a cold sore can easily transfer via oral-genital contact to establish a genital herpes infection in another individual. Besides causing cold sores and possibly spreading to the genital region, herpes simplex-1 has now been linked with the development of serious neurological diseases such as Alzheimer's disease, Bell's palsy and trigeminal neuralgia. Recent research also shows that co-infection by HSV-1 and HIV (human immunodeficiency virus) can enhance the activity of both viruses in patients who have AIDS and non-genital herpes lesions. HSV-1 infects about 50% of the population.

Herpes simplex virus - Type 2 (HSV-2; also Human Herpes Virus-2, HHV-2). This type is the usual cause of genital herpes, which is classified as a sexually transmitted disease. HSV-2 reached epidemic status in the 1980s and 1990s, mostly because of its increased incidence among teenagers. In the world of virus classification, HSV-2 and HSV-1 are nearly indistinguishable except for their different clinical symptoms. However, even these differences are inconsistent, since both types of herpes simplex can cause oral and genital herpes outbreaks.

Herpes zoster virus (HZV; also Varicella zoster virus, VZV, and Human Herpes Virus-3, HHV-3). Chickenpox results from a first-time infection by

HZV. When this virus recurs later in a person's life, it causes shingles. As the average age of our population increases, more and more people are suffering recurring bouts of post-herpetic neuralgia (nerve pain) as a result of shingles. This herpes virus is considered to be the most infectious of the known herpes viruses. Greater than 90% of the population is infected. HZV has been linked to the autoimmune disease called lupus. Furthermore, HZV outbreaks, which are now epidemic among people with AIDS, are often the earliest indicator of HIV infection.

Epstein-Barr virus (EBV; also, Human Herpes Virus-4, HHV-4). The major cause of infectious mononucleosis ('kissing disease'), EBV may also be the leading culprit in causing Chronic Fatigue Syndrome and other disorders of the immune system. EBV has also been linked with lupus, lymphomas, and other cancers. This virus is now considered to be quite damaging and mutagenic (causes genetic mutations) in the body. Around 75% of the population will test positive for EBV.

Cytomegalovirus (CMV; also, Human Herpes Virus-5, HHV-5). CMV can cause mononucleosis and hepatitis and it can also be sexually transmitted. Recent research suggests that CMV has a role, in conjunction with other types of viruses, in turning on cancer genes. The occurrence of CMV is strongly correlated with vascular diseases such as coronary artery disease and atherosclerosis. Even though it is generally asymptomatic, CMV may turn out to be a key factor in the development and progression of heart and blood vessel disease, the leading killer in all developed nations. CMV infects about 60% of adults, but is even more common among homosexual men and is associated with AIDS.

Human herpes viruses - Types 6, 7, 8 and 9 (HHV6, HHV7, HHV8, and HHV9, respectively). All HHVs are associated with disorders of the immune system, especially AIDS. HHV8 is also called Kaposi's sarcoma-associated human herpes virus (KSHV), which causes a type of skin cancer that occurs most often in people with AIDS. The recent discovery of new HHVs in people with AIDS suggests that there are more to be found. Indeed, new types of these herpes viruses are probably evolving every year. HHV-6 and HHV-7, both found in about 90% of the population, are two closely related viruses that are relatively new discoveries and are considered to be "universal" herpes viruses. Infection with HHV-6 during

childhood causes "roseola infantum" a.k.a. "sixth disease". HHV-6 has recently been linked with the development of multiple sclerosis.

Herpes viruses can occur without symptoms in nerve ganglia, which are at the bases of nerve cells near the spine or throughout the face. In these locations the viruses are seemingly in. They remain at this stage until something triggers them to move up the nerve fibers, enter healthy skin cells, and cause sores. Typically, a familiar pain or itching precedes the formation of sores, signifying an oncoming outbreak that will result in the well-known fever blisters. Sores do not always appear, though, especially in HZV infections. Internal blooms of HZV can instead cause unpleasant or even stabbing pains in nerves around the waist or spine.

HSV and HZV are trickier than most viruses because they are latent for long periods of time and because they can travel from one cell to another without ever leaving the internal environment of the cell. Both of these properties enable herpes viruses to escape notice by our immune system, at least until they burst out of the cells they have just killed and attract the attention of our antibodies. This is why our immune system is helpful in fighting herpes outbreaks but is incapable of entirely eliminating herpes viruses from our bodies.

As you can see, herpes aren't just nuisance diseases like once thought. New research links herpes viruses not only to the well-known diseases like cold sores, genital herpes and shingles, but to even more serious human diseases such as: heart disease, hypertension, Alzheimer's disease, cancer, lupus, and multiple sclerosis. This new link is supported by the fact that all herpes viruses set-up life-long (latent) infections in people. The old logic held that, since people were not visibly sick most of the time with herpes virus diseases, these viruses must be "sleeping" during most of our lives and therefore were not dangerous to our health. New research tools and techniques that can examine our bodies in much greater detail paint a much different picture. It now appears that herpes viruses are not actually "sleeping" at all. Rather, they are very active in the parts of the body that they inhabit, inflicting constant, cumulative damage to critical organs in our bodies as they replicate at a low level throughout our lives. This damage begins early in our lives, at a low enough level to not produce any noticeable symptoms in generally healthy individuals.

Herpes viruses are also very sensitive to their environment. In a young person with a healthy immune system, they will attack at a very low level to avoid large-scale activation of the immune system, which could deliver a damaging blow to the herpes viruses. When the herpes viruses sense that stress, aging, cancer or physical injury has weakened the body, they accelerate their attack, just as they do if they sense that the immune system is preoccupied fighting off another infection, such as a cold or flu. This is why symptomatic herpes outbreaks often follow another illness like a severe flu, a physical injury such as surgery, or periods of emotional stress.

This new way of viewing herpes viruses is a tremendously important revelation that will affect everyone's health since herpes viruses are universal factors in human health. The medical data are very clear. Virtually 100% of the human population, regardless of location, carries at least one herpes virus. The data also show that the majority of the human population is harboring at least five herpes virus infections.

The vast literature on herpes research underscores the challenge of understanding how this family of viruses affects our immune system. Several dozen complications are already known to be associated with herpes infections of different types, and more are being discovered each year. Many such complications, such as post-herpetic neuralgia, do not respond to antiviral treatments and can drag on for months or years after the initial infection has subsided.

Author's Note: Based on the trends in current medical research, it is my opinion that herpes viruses will continue to be further implicated in an increasing number of life shortening and life ending human diseases. Once this knowledge becomes widely accepted in the mainstream medical establishment, keeping herpes viruses in check throughout our lives will be a major goal to extend the length and improve the quality of human life.

WHO GETS HERPES AND WHY?

As mentioned above, everyone probably has herpes viruses, usually of multiple types. They are very contagious and opportunistic, but about

sixty percent of us have strong immunity to them. So the puzzle is, given that everyone can harbor herpes viruses all of the time, why do only some people have outbreaks? Or, more to the point, what causes herpes outbreaks? Unfortunately, nobody has satisfactory answers to these questions. But, although the factors that trigger herpes outbreaks are largely unknown, we do have a few good clues.

One clue comes from the observation that physical trauma to nerve cells, such as from a surgeon's scalpel, will activate herpes viruses. Another clue is that herpes outbreaks are associated with several kinds of stress. These include cold temperatures, injury, synthetic drugs, cancer, allergies, depression, infectious diseases, unhappiness, anxiety, and too much sunlight. Shingles is often associated with people over 60, so this type of outbreak is related to aging. Patients whose immune systems are suppressed by cancer chemotherapy, radiation therapy, and drugs used after organ transplants, or by AIDS or other immunosuppressive disorders, are especially susceptible to herpes outbreaks. Indeed, herpes infections in immunosuppressed patients are the most severe, leading to pneumonia, liver disease, CMV retinitis, and other serious complications that can be fatal.

These clues point directly or indirectly to the immune system as the main player in determining our susceptibility to herpes. This should come as no surprise, since this is our primary defense system against all kinds of microbial diseases. Our immune system, which is so critical to our health, is constantly bombarded by stress. Everything that we do to our bodies affects it. Smoking, poor nutrition, and recreational drug use, all of which are common in this modern age, cause stress that is detrimental to our immune system. Hard exercise, injury, surgery, and UV radiation in sunlight and in tanning booths all slow down our ability to make the principal infection-fighting cells of the immune system. These stresses and how they affect our susceptibility to infection constitute a topic worthy of a separate book. But suffice it to say for the moment that anything you do that is inconsistent with good health will most likely make you more vulnerable to infection by one or more microbes, including herpes.

Even without these physical stresses, an immunological slowdown occurs automatically as we age. When we get sick with one disease, we

become susceptible to others in our immunologically weakened state. Anxiety and emotional stresses are known to suppress the immune system. In addition, many, many prescription drugs and other so-called medical "cures" are also immunosuppressive.

The topic of who get herpes began to hit closer to home for me a couple of years ago. Some publicity in a local newspaper about using *Larrea* for treating herpes attracted quite a few phone calls to my office from people who were suffering with shingles. All of the callers were in their later years, most having retired to Arizona, and they all reflected a level of desperation that surprised me. I have since come to realize that shingles is, like other types of herpes outbreaks, a tremendously life-ruining disease even when it is not life-threatening. All of the people who called, and all of the people suffering from shingles with whom I've spoken since then, made it clear to me how this disease could significantly diminish someone's quality of life.

Another experience showed me what people think about who gets herpes. It came at a plant chemistry conference that I was attending in 1997 in the Netherlands. I was there to present some preliminary research results on the anti-herpetic activity of *Larrea* extracts. Since this was an international audience, I innocently thought that my presentation could be enhanced by introducing the topic of herpes by its name in several languages. So, as I mingled with other conference participants at a morning break before I was to speak, I sought people from several countries to ask them for the term for herpes in their language. Although most people were cooperative (and I found that herpes is 'herpes' in a lot of other countries), I was surprised by some of the answers I received. One person couldn't remember the word in his language and several people asked me who I was to ask them such a personal question. But the king of answers came from a fellow from Sri Lanka, who informed me that they don't have herpes in his country! (I wouldn't recommend using this answer as a basis for moving to Sri Lanka to avoid herpes.) Herpes is clearly a social stigma, but in my naivete I thought that the prevalence and rise of herpes outbreaks would at least qualify the subject for open discussion at a scientific conference. My assumption was accurate to a small degree, though, because several conference participants came to me later to ask how they could get some *Larrea* for their own use.

The spread of herpes among young people is increasing faster than in any other age group, primarily due to sexually transmitted types of herpes. It is of no surprise to me, therefore, that my work with *Larrea* and herpes has brought a different group of students to my door than just the ones taking my classes. I have lost count of how many have dropped by to ask, as did my fellow scientists at the Netherlands conference, where they could get some *Larrea*. I am always delighted at the opportunity to give a botany lesson to them by taking them out to the 7th floor balcony near my office and pointing northward to the football stadium, next to which is a mountain that is covered with *Larrea* plants..

MEDICAL TREATMENT FOR HERPES

This section includes some basic information about the mainstream medical treatment of herpes, as well as some comments about what kinds of treatments should be available but aren't. To begin, there should be at least three kinds of medical strategies for preventing or treating herpes outbreaks: 1) Inhibit the growth of herpes viruses; 2) Boost immunity to herpes viruses; 3) Reduce exposure to immune-suppressing stresses. Standard medical protocols for treating herpes focus on the first strategy, as well as on treating symptoms but doing nothing to alleviate the infection. The latter is a huge topic unto itself because it includes so many treatments that are not aimed at herpes outbreaks directly (for example, steroids, non-steroidal anti-inflammatory drugs, painkillers, analgesics [narcotic and non-narcotic], anesthetics, anticonvulsants, neuroleptics, electrical stimulation, ultrasound, and acupuncture, among others), so I won't address such a large issue in this book. I'll start out instead by telling you a few things about the mainstream antiviral treatment for herpes, then provide some comparative information about *Larrea*.

1) Treatment that Inhibits the Growth of Herpes Viruses

The most common direct treatment for herpes since early 1980s has been the prescription drug Zovirax®. Until recently, when you visited most doctors for a problem with herpes, what you got was usually Zovirax® and little else. For this reason, Zovirax® is the drug that I have chosen to tell

you about so you can compare it with the information about *Larrea* that comes later in the book.

My focus on Zovirax® is now somewhat obsolete, because replacement drugs are currently being promoted heavily by the same company that manufactures it (formerly Glaxo Wellcome, now GlaxoSmithKline). Indeed, the company has taken unprecedented steps in promoting the replacement of Zovirax®, by advertising on television for viewers to call a toll-free number to qualify for free-trial samples, by taking out full page ads in numerous magazines (also including the free-trial offer), and by arranging for the inclusion of glossy insert ads for my campus newspaper (and I would bet other campus newspapers as well). I have never seen such an advertising blitz for a prescription drug before. A little explanation is in order here. It begins with the fact that the active ingredient of Zovirax® (acyclovir, which I will discuss shortly) was patented in 1980 by Burroughs Wellcome Co. (a.k.a., GlaxoSmithKline). This patent, (No. 4199574, "Methods and compositions for treating viral infections and guanine acyclic nucleosides") recently expired. (Such patents are generally good for 17 years.) This means that other pharmaceutical companies can now manufacture generic acyclovir, which means that it is currently available more cheaply than it was under the name Zovirax®. Since GlaxoSmithKline has 'lost' ownership of the product, the company has invented replacement products which it has also patented. So now the company promotes the replacement products, which are covered under current patents, more or less going about their business as if Zovirax® never existed.

So what are the replacement products? The main one is called Valtrex®, which contains the active ingredient valacyclovir hydrochloride. It is no coincidence that this name is so similar to acyclovir. In non-technical lingo, I would describe valacyclovir as the same thing as acyclovir but with an extra chemical doohickey attached to it (in this case, the doohickey is an amino acid called L-valine). Indeed, as soon as valacyclovir goes into the body, it immediately loses the doohickey and becomes acyclovir itself! So the most significant difference between the two is that GlaxoSmithKline holds a current patent on one (valacyclovir) but not on the other (acyclovir). That is why the company is blitzing the market with their 'new' treatment for herpes. This drug is covered by patent number 4957924 ("Therapeutic

valine esters of acyclovir and pharmaceutically acceptable salts thereof"), which was granted in 1990. (You can expect yet another 'new' product to come along before this patent expires.) For the purposes of this book, therefore, my discussion of Zovirax® applies equally to Valtrex® and any other similar new product that is derived from acyclovir.

Medical Economics Company of Montvale, New Jersey, publishes the Physicians' Desk Reference®, which describes drug dosages, effects, and side effects. This is an important resource for every doctor and every patient, although patients do not generally own it. You can find one in the reference section of almost any public library. In the 1996 edition, you will find that Zovirax® is made and sold in capsule and ointment forms, as well as in powder form that is used in preparing solutions for intravenous treatments. The seven pages devoted to Zovirax® provide an extensive review of medical data, which includes evidence for drug effectiveness, recommendations for treatment, and warnings about side effects. It is notable to me that there is not one single comment about how this drug might affect the immune system, the significance of which will become clearer to you after you read below how acyclovir works to inactivate herpes viruses.

Acyclovir is designed to be very similar to some of the components of DNA, which is what our genes and the genes of herpes viruses are made of. Because it is similar to, but not identical with, such components, it causes normal DNA to become abnormal. The net result is that acyclovir stops cells from making new DNA. This is great when acyclovir prevents cells from making viral DNA, but it is not so great when it prevents cells from making their own DNA.

The action of acyclovir occurs in two steps, both involving enzymes. Enzymes are proteins that speed up biochemical reactions. Life would not exist without enzymes. In the first step an enzyme called thymidine kinase (TK) modifies acyclovir so that it can be incorporated into a formerly growing, but now nonfunctional, molecule of DNA. The reason that this modified DNA is faulty is because, once it incorporates acyclovir, the DNA molecule stops growing. Think of it like this: new DNA is made by a process that is analogous to building a chain by adding one normal link after another. Acyclovir would be like a faulty link that gets added to the

chain, which blocks the addition of any more links. Growth of the chain stops there. When cells can no longer make DNA, they can no longer make any healthy new cells.

The second step involves the enzyme DNA polymerase, which the cell needs for making DNA in the first place. The TK-modified acyclovir prevents this enzyme from working at all; it is an inhibitor of DNA polymerase. So what we have here is a double whammy against making DNA. This double whammy is effective against herpes viruses because, if the host cells cannot make viral DNA, then they cannot make more viruses. The infected host cells themselves are also doomed, but at least acyclovir stops the spread of infection to healthy cells nearby.

A very important point to note about acyclovir and its analogs is that they act at a late stage of viral replication, when viral DNA is already being made. This means that a lot of what the herpes virus does during an infection has already been done. For example, the proteins that these viruses make when they are starting to bloom have already been made. This may not seem like such bad news, but in at least one type of herpes infection (CMV), some of the viral proteins are linked with the activation of genes that cause cells to become cancerous. It would therefore be much better if the action of an antiviral drug could occur at a much earlier stage, before these proteins could be made in the first place.

But what about the effects of acyclovir on healthy, uninfected cells? Once you take it, acyclovir goes everywhere in your body, not just to the sites of herpes infections. This means that, wherever DNA is being made, acyclovir will have an effect. The extent of any adverse effects on host DNA is essentially waved away in the GlaxoSmithKline literature, which cites data showing that acyclovir has a 120-fold greater chance of stopping viral DNA than of stopping your DNA.

Keep in mind that DNA is being made wherever cells are dividing: mostly cells of the skin, bone marrow, and intestinal lining. Dividing cells in the bone marrow are where blood cells and cells of the immune system come from. Isn't that interesting? Our bodies depend on dividing cells for a healthy immune system, and acyclovir inhibits DNA synthesis in dividing cells. The tradeoff of stopping your own DNA at a rate that is less than 1%

of that which stops the viral DNA may or may not be a good one. I don't know of any experimentation that addresses the question of how extensively acyclovir might depress our immune system.

2) Treatment that Boosts Immunity to Herpes Viruses

Mainstream medicine generally offers vaccines to boost immunity to specific microbes, but only when such vaccines are available and approved for clinical use. In regard to viral vaccines, annual flu vaccination seems to be very popular, according to the flu-season scares that appear in the media every year. Vaccines against polio and other viral diseases have also become important tools in the battle against certain diseases. At the moment, however, I know of only one FDA-approved vaccine against a herpes virus. It is called Varivax® and it is approved for immunization against chickenpox. In addition, a non-approved product that is based on Varivax® as the main component of a "Varivax® Shingles" treatment is also available (see Appendix A), but it is not clear to me whether this product provides any immunity to shingles.

Dozens of research articles are published each year on the scientific search for additional vaccines against herpes viruses. At any one time several trials may be underway using cell cultures or laboratory animals, but very few ever reach the stage of clinical experimentation on humans. At the moment, the predictions for more herpes vaccines are optimistic, which is the nature of such predictions. (Does anyone remember the widely publicized prediction in 1985 by top government officials that we would have an AIDS vaccine in a few short years?) This is definitely a 'what should be' medical treatment for herpes. But very little is available right now and predictions are hard to evaluate until we see more research progress.

3) Treatment that Reduces Exposure to Immune-Suppressing Stresses

Unfortunately, modern medicine is even more woefully behind on this strategy than on vaccines. This is more of a 'whole-person' approach to

medicine, which is basically absent from the training that our doctors get in medical school. Most commonly, you may be advised to prevent herpes outbreaks by staying out of the sun or by getting some help with stress-management. But ask your doctor sometime whether he or she knows about the potential relationship between your herpes infections and your consumption of refined sugar. Find out whether your doctor knows about the jolt that your immune system takes every time you eat a candy bar or drink a soda. Yes, every time! A consistent daily intake of sugar causes a consistent suppression of the immune system. It is common sense that poor nutrition invites disease into our bodies, and one avenue for this result is to suppress our immune system, the very best system that we have for fighting any disease in the first place.

Furthermore, one of the side effects of prescription drugs is to suppress our immune system. Do you think that the action of acyclovir to inhibit DNA synthesis might have such an effect? As I mentioned before, it's a good bet, but nobody is doing research to even find out the answer to this question. Do you think other drugs might have the same effect? There is no doubt about it. What this means is that we not only do not get sufficient advice on how to avoid suppressing our immune system, but we instead get drugs that do just the opposite of what we need. They keep our bodies from doing what they are supposed to do.

The development of high-cost synthetic drugs without regard to other medical options is an all-to-frequent feature of our drug-oriented health industry. So at least you should know what to expect from a drug that your doctor prescribes for you, regarding not only its targeted effects but also its side effects, especially those involving your immune system.

THE CREOSOTE BUSH: NATURE'S MEDICINE CHEST

Botanists classify *Larrea tridentata* in the caltrop family, officially called the Zygophyllaceae, which includes at least 250 kinds of plants besides the creosote bush. *Larrea* is one of only two plants in the family that have any significant medicinal value. The other is *Peganum harmala* (no common name in English), which produces hallucinogenic and other psychoactive chemicals. *Larrea* is distinctive in its medicinal properties

from *Peganum* and all other members of the family.

The habitats where *Larrea* grows are typically hot and dry, which characterizes vast areas of the southwestern U.S. and adjacent Mexico, specifically in regions that we call the Mojave Desert, the Sonoran Desert, and the Chihuahuan Desert. Ecologists call the creosote bush a "dominant" shrub in these areas, which means that it is the most common shrub in its environment. A desert drive going from southern California, through Arizona, New Mexico, and through west Texas, will pass through hundreds of miles of shrubbery that consists mostly of *Larrea.* This plant does not just live in harsh environments, it thrives. These shrubs can hang around for a long, long time. Each plant has the potential to live at least 12,000 years because it can grow in groups of long-lived clones -- that is, it can grow from genetically identical sprouts off of the same parent plant. *Larrea* is therefore one of the superstars of survival in the biological world. Few plants (and no animals) can boast of such widespread, overwhelming success.

Any plant that can live up to 12,000 years in a harsh environment and dominate its neighbors without being eaten and without being infected with some kind of fatal disease must be doing something extraordinary to defend itself. Since the creosote bush cannot run and hide from its enemies, it instead builds a chemical arsenal to fend off otherwise lethal invasions. The wide array of chemicals in *Larrea* provides protection against viruses, bacteria, fungi, insects, rodents, weedy competitors, and other potentially destructive agents in the environment. It is no wonder that the diversity of chemicals that *Larrea* produces to defend itself from deadly parasites and plant-eating animals is also a potpourri of medicinally active chemicals that are equally powerful for fighting human diseases.

Folk medicine is often a reliable source of information about the medical potential of plants, and the historical knowledge that we have about *Larrea* is a particularly good example of how this works. Native Americans have long used *Larrea* for treating digestive disorders, rheumatism, venereal disease, sores, bronchitis, chickenpox, influenza, and the common cold. These historical uses of *Larrea* are direct evidence for the value of this plant in medicine. (For a more complete list of Native American medical uses of *Larrea*, see Appendix C.)

The most important botanical drugs are discovered and validated by linking folk medicine and modern medicine. This means that the folk knowledge of a botanical drug can be validated by current scientific research and medical knowledge about its safety and effectiveness. This kind of corroboration is the foundation for making decisions on using botanical medicines in spite of the fact that much less medical research is done on them than on synthetic drugs. The primary reason for this discrepancy is that drug companies cannot get the patents they need for commercial 'protection' of botanical products, so they quite rationally do not put money into research on such products. Nevertheless, we do have modern medical data on many botanical medicines, primarily from university scientists, such as myself, who are not working toward the development of drugs for big companies. One such botanical medicine that is now being studied is *Larrea*.

LARREA AS A MODERN BOTANICAL MEDICINE

Just what is the modern medical evidence for the effectiveness of *Larrea* as a botanical medicine? Here I provide an overview of the variety of applications that *Larrea* has been used for in the 20th century, then in the next few sections of the book I'll focus on the more recent work on *Larrea* versus herpes. Generally, evidence for the benefits of *Larrea* preparations has been accumulating since the 1950s, showing an array of applications that in some ways exceeds its impressive folk medical history. In topical use, for example, medical practitioners have noted that the use of tinctures or salves made from the leaves of *Larrea* prevents bacterial infections in skin abrasions. Applying a *Larrea*-leaf tea to the skin can also eliminate rashes that resist treatment by prescription steroids. More recently, an astounding variety of success stories have been reported from the uses of *Larrea* preparations for the treatment of sores and lesions of the skin, including herpes outbreaks. I'll expand on some of these later.

In addition, the internal use of *Larrea* also has a strong, broad base of medical applications. Tablets from *Larrea* have been of great benefit for decades in treating arthritis and rheumatism. Cancer patients have reported success in shrinking and eliminating tumors by taking powdered *Larrea* leaves. A tea from *Larrea,* although horrible-tasting, is nevertheless

beneficial against impaired liver metabolism, dry skin, brittle hair and nails, and digestive disorders involving fats in the diet. Clinical data show that this tea aids people who have poor-quality blood lipids (fats, cholesterol, etc.) that are associated with arteriosclerosis. Certain ingredients from *Larrea* leaves fight the damaging effects of oxidants, the deadly bleaching chemicals that our cells make when they age or become diseased. These are some of these same chemicals that slow down viral reproduction and inhibit the ability of herpes viruses to infect healthy cells.

Sidenote on Larrea as An Official Homeopathic Drug

In addition to its current use a naturopathic drug against herpes, *Larrea* is also listed under its spanish name of Paloondo as an official homeopathic drug in the United States and in Europe. It was considered for inclusion into the pharmacopoeia of homeopathic substances based on the traditional uses of Native Americans for treating arthritis, rheumatism and muscle diseases. A successful homeopathic "proving" was carried out by Schutt in 1960 on two groups of homeopathic provers to treat muscle pain and polyarthritis. The mother liquor for the homeopathic drugs is prepared from young branches and leaves of the plant using 65% alcohol as the solvent. The drug is most often used at 1X (full strength) concentration in homeopathic preparations, although concentrations ranging from 1X to 30c are recognized. The clinical uses for *Larrea* (Paloondo) as a homeopathic drug include, colds, influenza, migranes, neuralgia, osteoporisis, rheumatism, and sinusitis. Dr. Willmar Schwabe is credited with introducing this homeopathic drug into Europe. A homeopathic drug for rheumatism containing *Larrea* has reportedly been produced in Austria under the trade name, "Euretin."

HOW DO YOU EVALUATE A BOTANICAL MEDICINE?

This may be the most important section of the book, because it provides you with an insight into making decisions regarding botanical medicines of all kinds. So please make note of what I'm telling you here *every time you are faced with a decision regarding a botanical medicine*. This 'how-to' question may seem like a trick, because the answer seems to

be an obvious one: get credible information. If the information is good enough, then see if a preparation of the botanical medicine in question works for you. Usually, your first step in evaluating any medicine is to get credible information from your physician, because you grant credibility to your doctor as a professional medical practitioner. However, the explosion of the availability of botanical medicines and their myriad products (we call them 'nutritional supplements' for legal reasons) makes it an impossible task for anyone to know much about more than a just few of them. This means that you will have to become a scientist, at least as much as you can, and evaluate the available information for any such product yourself. Ideally, you would find, read, and evaluate the scientific literature on a botanical medicine, and judge its safety and effectiveness on what you have read. Unfortunately, this presents two main problems: 1) you don't have the skills or resources to do it; 2) even if you did, you would find that the vast majority of products on the market are not backed up by any kind of research whatsoever. So you turn to books like this one and hope the information is good. If this is your strategy, then this is what you should look for in such a book: ***data***. Data equal evidence; absence of data means there is no evidence. This is crucial. Specifically, look for data that you might expect to be available for any kind of drug. This might include: 1) Laboratory studies of some kind, either on living cells or on laboratory animals; 2) What the active ingredients are and how they work; 3) Clinical results, either from individual testimony, which is a starting point, or from full clinical experiments, which is the best kind of data available. Regardless of its folk medical history, in modern times every botanical medicine should be supported by some or all of the above kinds of data. The more supportive data there are, the stronger the evidence is that it works.

This point about supportive data cannot be emphasized enough, especially in light of my comments in the preface about the minimal regulation of botanical medicines. So let's see how well the information on *Larrea* and herpes stacks up to the gauntlet I've laid down for botanical medicines.

ANTIVIRAL CHEMISTRY OF LARREA

In 1995 two anti-HIV chemicals were discovered in *Larrea*, a discovery that came on the heels of similar discoveries in other plants over the past 15 years or so. In fact, the scientific literature on antiviral chemicals from plants is abundant. The recent studies of *Larrea*, however, focused on two particular antiviral chemicals that are unique to this plant, one of which is well-known to plant chemists (called NDGA, short for nordihydroguaiaretic acid) and the other of which is a simple derivative of it (i.e., NDGA with an extra doohickey on it, in this case an extra carbon). Indeed, NDGA has been the subject of dozens of scientific studies over the past few decades, and it even played an important role as a food additive at one time. (It is a powerful antioxidant that was used to keep processed meat from becoming rancid, a role that is now occupied by synthetic antioxidants such as BHT and BHA.) Although the second compound was already known, it was given a new name in light of its newly discovered antiviral activity. The scientists who did this research named it 'mal.4' (short for 'Malachi 4:5-6'). This is an unusual name for a plant chemical, but it was chosen to refer to a part of the bible that threatens a pestilence (HIV?). NDGA and mal.4 are classified as lignans, which are a common class of chemicals in many plants.

In addition to lignans, *Larrea* also produces another class of chemicals that have antiviral activity. These are the flavonoids (loosely referred to as 'bioflavonoids' in the popular literature), which is a class of chemicals that occurs in all plants. Indeed, the most widespread antiviral chemicals of plant origin are flavonoids. *Larrea* produces more than two dozen of the 2,000 or so known flavonoids. One of the *Larrea* flavonoids, called quercetin, is common in many plants and has been shown to be active against several human viruses, including HSV-1, polio virus type 1, parainfluenza virus type 3, and respiratory syncytial virus.

The strongest antiviral activity of *Larrea* flavonoids comes not from individual chemicals but from their mixtures. I say this because of a 1992 article on the flavonoids of a sticky substance called propolis, which is a plant resin that bees use as glue for their hives. Propolis is like *Larrea* resin in that it contains several types of flavonoids. The whole resin is more active against HSV-1 than any of its individual flavonoids, which

compares with the potent activity of flavonoid-rich *Larrea* resin against the same virus. Furthermore, experiments using combinations of certain of pairs of these components show them to be more potent together than individually. Several of the components of propolis and *Larrea* are the same, which means that the richness of the chemical mixture in *Larrea* resin is the foundation for its antiviral potency, not any single compound.

HOW DOES LARREA WORK?

The creosote bush mostly remained outside of modern medical research until its anti-HIV properties were reported in 1995. Since that time new information has also been discovered about its activity against herpes viruses. At the moment, components from the leaves of the creosote bush have at least three known kinds of biological activities against viral infection. One of these is directly antiviral, and the others are what I refer to as cellular enhancers and general stimulants of the immune system.

The main clue as to how *Larrea* works directly against viruses comes from research on HIV. Specifically, NDGA and mal.4 inhibit the activity of a certain kind of gene promoter that is important for viral replication. (Genes sometimes need promoters to get them going, kind of like an on/off switch for the DNA). When this promoter is inhibited, the appropriate gene can't work and the viruses cannot function in the process of making more viruses. Although it is likely that NDGA and mal.4 work the same way on herpes viruses, nobody has done the experiments to confirm this prediction directly. However, laboratory studies support this idea indirectly, as I discuss in the next section. What the inhibition of a promoter gene means is significant in comparison with Zovirax®, because the antiviral action of NDGA and mal.4 comes much earlier than does the action of Zovirax®. Because of this earlier action, we can expect that whatever damage might be caused by the virus will be comparatively reduced or eliminated sooner by *Larrea* than by Zovirax®.

The actions of flavonoids against viruses is an area of research that is full of 'maybes.' Several experiments show that flavonoids diminish the CPE (cytopathological effect) of viruses on the cells that they infect. However, CPE is a result that can be caused by any of several activities:

by keeping the viruses out of their host cells, by somehow canceling the lethal effects of the virus, by 'killing' the virus before it replicates, by inhibiting various viral enzymes, or by slowing down or stopping viral replication. Experiments over the past several years show that flavonoids, including some of which occur in *Larrea*, may have several mechanisms of action. So, for the most part, we know that flavonoids are useful against viruses but we don't know all of the ways that they work. Nevertheless, it is potentially very significant that the multiple possible mechanisms of flavonoids represent multiple challenges for viruses to overcome. This is in contrast with single-action drugs, such as Zovirax®, whose antiviral activity can be overcome rather quickly by viral mutations, giving rise to drug-resistant viruses.

The same chemicals from *Larrea* that have antiviral activity also have the property of being cellular enhancers. I define cellular enhancers as substances that enable cells to be stronger and live longer. This is a pretty general definition that includes many kinds of chemicals, but the most exciting and attention-getting cellular enhancers that have come into the public awareness are antioxidants. Every self-respecting health food store stocks a number of these, including beta-carotene, vitamin E, flavonoids, pycnogenol, procyanidolic oligomers (PCOs) and oligomeric procyanidins (OPCs), superoxide dismutase (SOD), vitamin C, and selenium.

Antioxidants are important because they help our bodies battle the toxic forms of oxygen that are continually being made in our cells. These consist of things that chemists call oxygen radicals, superoxide, peroxides, and epoxides. Aging, cell degeneration, and susceptibility to disease are all correlated with a buildup of these oxidants in our cells as we undergo stress and as we age. Leaves of the creosote bush contain numerous antioxidant flavonoids as well as one of the most powerful antioxidants made by plants, which is NDGA, along with several of its related lignans.

The tricky part about antioxidants is how they work. This is tricky because there are many different kinds of oxidants, which means that antioxidants cannot be just one thing. We have oxidant enzymes, for example, which can be inhibited by chemicals that are called antioxidants. Our bodies make oxygen radicals and peroxide, which are removed by antioxidants. Fats in our cells are made into oxidants by other oxidants,

both of which are overcome by antioxidants. One of the first antioxidant experiments involving flavonoids was conducted in 1936. It showed that vitamin C, which is an antioxidant, would last longer in the presence of flavonoids that kept it from oxidizing – that is, antioxidant flavonoids protecting antioxidant vitamin C. Cells have to maintain a delicate balance between things that need to be oxidized (burned up), such as our food, and things that we can't afford to be oxidized, such as the membrane fats in nerve cells, blood cells, and immune system cells. Antioxidants in our food, in our nutritional supplements, and in our botanical medicines help with this balance.

Finally, recall that I mentioned a few times earlier in the book that Native Americans used *Larrea* for treating rheumatism, and that the 20th century medical uses of *Larrea* have included treatments for arthritis and rheumatism. In a modern medical context, these observations are clues about the potential efficacy of *Larrea* against immune problems. Arthritis implies joint pain, and there are many kinds of arthritis. Rheumatism and arthritis (i.e., rheumatoid arthritis) imply joint pain associated with an immune disorder. Modern medicine refers to rheumatoid arthritis as an autoimmune disease, which means that your immune cells attack your own cells as if they were infectious invaders of some sort, like viruses. (Other kinds of autoimmune diseases include lupus and multiple sclerosis, for example.)

This clue about the potential immunological effects of *Larrea* preparations has led to some very recent research on the immunological activities of extracts from this plant. In laboratory cultures, an extract of *Larrea* was found to be a powerful stimulant in blood cells for the production of chemicals called interleukins. Interleukins are responsible for signaling the cells of the immune system to get to work. Indeed, according to the lead researcher on this project, *Larrea* extract is one of the most powerful stimulants for one type of interleukin ('IL-6') that he has ever tested in his laboratory.

It should come as no surprise that *Larrea* extracts have beneficial immunological effects. Compounds called immunostimulants are widely known from many different kinds of plants, as well as from fungi, algae, and bacteria. The most popular botanical medicine with such properties is

Echinacea, but many other kinds of herbal preparations are currently available that also contain known immunostimulant compounds. Some such compounds, especially from algae and mushrooms, are even patented in other countries. This kind of work often involves the enhancement of interleukin production as a means to promote our resistance to cancer as well as to microbial diseases.

As we continue to examine the immunostimulant potential and other properties of the creosote bush scientifically, we will undoubtedly continue to confirm the accuracy of folk medicine regarding this remarkable plant. The ancients derived important medical benefits from the creosote bush, and now we know that we can do the same.

LABORATORY STUDIES

Studies of laboratory animals and of cells in artificial culture constitute the laboratory studies of the effects of *Larrea* extracts. I already alluded to some such studies in the section on antiviral chemistry. Most of the research in this area has involved cultures of host cells that are inoculated with herpes viruses. (Remember, viruses are parasites, so they cannot be cultured outside of a living host.) The most important study to date shows that *Larrea* extract is 1,000 times more potent than synthetic antiviral drugs, which means that you would need less of the *Larrea* extract than of the synthetic drug to get the same result. In this study, a *Larrea* extract was shown to inhibit the activities of HSV-1 and HZV.

Cultures of cells were infected with one or the other herpes virus, after which *Larrea* extract was added to subsets of each culture. The virus destroyed cells in cultures that contained no *Larrea* extract, within 72 hours. Cells in cultures that contained the *Larrea* extract in concentrations of 10-micrograms per milliliter were unaffected by the virus. Furthermore, the diminished CPE of cells that were inoculated with herpes and treated with *Larrea* remained low or absent after the removal of the *Larrea* treatment, showing that the treatment had eliminated all viral activity.

In addition, the activity of *Larrea* occurred against two kinds of herpes viruses and in two kinds of cells, one kind from humans and the other from

African green monkeys. Such broad effects suggest a virus-dependent mechanism of action in both cases, rather than a host-dependent mechanism. This is consistent with the idea of a general antiviral activity for *Larrea*, meaning that the anti-herpes activity of *Larrea* probably works the same way that the already known anti-HIV activity does.

Larrea has been shown over the years to have a variety of biological activities in laboratory studies. Examples of activities that show its potential effectiveness in human health include its antiinflammatory action and its preservative action against common bacteria. The two graphs below illustrate results of such studies.

CLINICAL RESULTS

The best kind of evidence in support of the efficacy of a botanical medicine is the direct evidence from clinical use, meaning its known effectiveness in humans. Folk medical evidence does not qualify as clinical data, even though it really is, since folk uses are not generally recorded the way we now record clinical data. Nevertheless, regarding the use of *Larrea* against herpes, there is an abundance of what I call testimonial data. This type of data consists of individual reports or groups of individual reports on its effectiveness. It is very valuable information, although it suffers from the criticism that it does not represent a full clinical trial, with scientifically controlled experimentation on large groups of Americans. (I specify Americans because our FDA does not accept clinical data from other countries as a basis for acknowledging the efficacy of any drug, maybe because the people there are so different from us.) Testimonial data are sometimes the only clinical evidence that we have for botanical medicines. This is because full clinical trials are very expensive and very time-consuming, so the funding and the research on botanical medicines rarely reaches the levels that are allocated for a patentable, synthetic drug.

The clinical results on *Larrea* as a herpes treatment come from credible institutional sources, from doctors, and from many dozens of people who have individually tried preparations on their own herpes outbreaks. Regardless of the source, the results are almost uniformly positive. In general, the entire body of results shows that *Larrea*

preparations can completely drive away a herpes outbreak much faster than Zovirax®, and that such preparations can even be effective when Zovirax® fails. The following are some of the examples of the clinical results that people have obtained so far. These results come from an informal survey of medical practitioners who have treated their patients with *Larrea* extract and of individual herpes sufferers who have volunteered to test the extract on themselves.

- More than 20 people have used *Larrea* topically to heal oral and facial blisters, usually in less than 24 hours. Without the use of *Larrea*, the symptoms in these cases normally last 3-7 days.

- About a dozen older men and women have taken *Larrea* internally to reverse the symptoms of shingles and to prevent recurrent outbreaks.

- Four women have used *Larrea* topically to reverse outbreaks of genital herpes, each within about 48 hours.

- Three people, two of which are HIV-positive, have used *Larrea* topically to shrink lesions from ongoing Kaposi's sarcoma on their feet or legs. Clear relief occurred within 1-2 weeks of daily application, where no other medication had worked.

- About two dozen HIV-positive individuals have used *Larrea* both topically and internally to clear lesions from severe, ongoing cold sores, genital herpes infections, and shingles, and to prevent subsequent outbreaks.

- Aisha Bey, Founder and Manager of the Holistic AIDS Project, reports that several people with severe ongoing herpes outbreaks associated with full-blown AIDS used *Larrea* to clear up their herpes outbreaks in record time, within a day or two.

The effectiveness of *Larrea* preparations is also a bit more personalized when you look over some of the key case histories of individuals, such as the following examples:

Case 1: A 48-year old woman in Bozeman, Montana, applied a single

swab of a *Larrea* tincture to a newly forming blister, immediately relieving the pain and swelling that otherwise accompanied her herpes outbreaks. The lesion was completely gone within 12 hours. Previously, Zovirax® had given her only partial relief.

Case 2: A 40-year old woman in San Diego, CA, endured painful, swollen blisters that normally lasted 3-7 days. After one application of a *Larrea* lotion in the evening, the blisters were gone by the next morning.

Case 3: In Phoenix, AZ, a young man positive for HIV applied a *Larrea* lotion to his oral blisters in the evening. The outbreak disappeared by the next morning.

Case 4: A 7-year old girl in Philadelphia, PA, who had been born with AIDS had painful sores on the inside of her mouth, making eating difficult and causing the girl to lose weight. Her sores disappeared completely within two weeks of starting a daily dose of *Larrea* capsules. She is now eating well and gaining weight.

Case 5: In Philadelphia, PA, a young, HIV-positive male with Kaposi's sarcoma applied a *Larrea* lotion to the lesions on one leg. Within 48 hours the lesions on the treated leg had become flattened, smooth, and lighter in color, while lesions on the non-treated leg remained raised, rough, and dark-colored.

Case 6: A Philadelphia woman with persistent Kaposi's sarcoma that resists Zovirax® found immediate relief by using the *Larrea* lotion; her lesions continued to become flatter, smoother, and lighter over the next several days.

It is clear from laboratory research as well as from case histories that *Larrea* is a safe and effective new treatment for herpes. And *Larrea* has the potential to be more than a herpes treatment. As explained earlier, *Larrea* is turning out to be effective against other viruses, including the dreaded HIV. This should come as no surprise, since the folk medical history of *Larrea* pointed the way for its use against an assortment of viral

diseases: influenza, the common cold, and chickenpox.

HOW SAFE IS LARREA?

Commentary in the folk medical literature does not mention any caution about using *Larrea*, either internally or externally. In recent times, more than 200 tons of *Larrea* have been sold since 1975 without safety becoming an issue. However, about two dozen reports have appeared in the medical literature or in the media about the potential for the oral consumption of *Larrea* to cause liver damage. This should not be a surprise, since everything you ingest – food, drink, supplements, drugs – is processed by your liver. That is the liver's job; it is the main detoxifying organ of the body. People who have a tendency to have liver problems should therefore make sure that their doctors monitor their liver enzymes when they take any kind of medicine. When the levels of certain liver enzymes change drastically, this indicates that the liver is in trouble.

Much ado has been made of the potential side effects on the liver of *Larrea* leaf powder when taken orally. I am not sure how much of this issue, if any, is based on good science, but at least one frequently cited report in the medical literature was clearly bad science (see below). All in all, this report is a good example of anti-herb hysteria that sometimes appears in the mainstream medical literature. I think caution is always a good idea. However, in comparison with the well-known and disastrous liver problems caused by acetaminophen (active ingredient of Tylenol®), *Larrea* is relatively very safe.

The following comments expand on the safety issues of *Larrea* that have been swirling about in the public literature for the past few years, including some historical perspective.

The Safety of Larrea: A Factual Analysis

Is *Larrea* safe to use? The answer in one word is, yes. However, just like every other substance that can have an effect on the human body, it is important to apply the most current knowledge and a healthy dose of

common sense to obtain the maximum benefits while eliminating the risk of any undesired effects. As you will see in the information below, there have been some questions raised about the safety of *Larrea* at least in a few individual cases investigated by the FDA in the early to mid-1990s. These few cases appear to be linked to preexisting liver disease and/or excessive consumption of raw, unprocessed *Larrea* foliage (a.k.a. chaparral herb).

Historical Information (1992-1996):

Dietary supplements containing *Larrea tridentata*, as a raw herbal ingredient, were the subject of scrutiny for a brief period in the mid-1990s. Unfortunately, while the cause of this concern was thoroughly investigated and no official regulatory action was initiated, a shadow still appears in the historical record. This scrutiny was initiated by the published anecdotal case mentioned above, whereby severe liver toxicity in an elderly patient was supposedly related to the consumption of raw chaparral herb (Gordon 1995). Although this case was published, it has been widely scrutinized as an attack against the herbal industry since major facts of the case, especially the fact that the patient had been taking many prescription drugs, including a prescription drug that was well known to cause severe liver damage, were buried without note within the report, and the findings as a whole did not support the cause and effect conclusion that was being implied. During this period of investigation by the FDA, the major herbal products associations, the National Nutritional Foods Association, and the American Herbal Products Association asked their members to institute a voluntary moratorium on sale of chaparral-containing products. The American Herbal Products Association also cooperated with the FDA in their investigation and commissioned an independent medical investigation into four cases of alleged liver toxicity that had been reported to the FDA, including the case subsequently published by Gordon in 1995. The independent investigation, headed by Dr. Clark Watts M.D., J.D., and other expert physicians in the field of liver disease, concluded that the cases most likely were associated with preexisting liver disease in the patients, possibly combined with extremely rare idiosyncratic reactions to chaparral. The report went on to suggest adding informational language to product labels but no further action was recommended (Watts 1994).

Based on this independent report, in 1995, the American Herbal

Products Association rescinded its voluntary moratorium on the sale of chaparral-containing products. The AHPA did however recommend that, "in the interest of consumer education and well being," products for oral ingestion containing this ingredient should carry the following informational language, "Seek advice from a health care practitioner before use if you have had, or may have had, liver disease. Discontinue use if nausea, fever, fatigue or jaundice (i.e., dark urine, yellow discoloration of the eyes) should occur." Consumers should not be alarmed by this informational wording, but rather should see it as a sign by the herbal products industry that at least some manufacturers are willing to take a balanced approach to consumer education and safety issues. Note: Do not use *Larrea*-containing products that do not bear this informational wording. An absence of this wording on any product or literature is the sign of an unaware or irresponsible manufacturer not to heed the very reasonable AHPA recommendations.

At least one company has taken an active stance to address the potential safety issues surrounding the medical use of *Larrea*. This company has developed patented technologies to eliminate the suspected toxin from *Larrea* (see Appendix D). In independent testing at a major medical school, this patented extract of *Larrea* was shown to be as safe as cinnamon oil and clove oil, two natural plant oils widely used in food products (see accompanying graph). Additionally, when the extract was formulated with extra vitamin C, the same way that the company manufacturers all their dietary supplements, it was found to be much safer than either cinnamon oil or clove oil. In fact, the formulations with patented *Larrea* extract and vitamin C significantly extended the life of the liver cells used in this laboratory study. Over the past six years, tens of thousands of consumers and medical practitioners worldwide have used dietary supplement capsules and topical skin products containing this patented extract of *Larrea* with tremendous consumer acceptance and no serious adverse effects reported.

In the July 2001 issue of the Journal of Alternative and Complementary Medicine, an article entitled "*The safety of low-dose Larrea tridentata (DC) Coville (creosote bush or chaparral): a retrospective clinical study,*" provides details about patients treated for various conditons using extracts of *Larrea tridentata*. In all cases, test subjects showed no toxicity

effects, as measured by blood chemistry analysis, complete blood count, and physical examination, from the use of *Larrea tridentata* as a natural medicine (Heron and Yarnell 2001). After a thorough search of the literature, no controlled studies in humans contradicting these published findings of safety have been found to exist.

1996 to 2003: SOME USERS OF LARREA TALK ABOUT THEIR RESULTS

Author's Note: This information was summarized from a representative sampling of customer feedback sheets returned by users of *Larrea* products for various indications. A manufacturer distributed the customer feedback sheets during a six-year test marketing period to evaluate safety and efficacy of the products and provided access to the documents. The names of the specific products used have been changed to **LARREA** to comply with U.S. Federal (DSHEA) regulations.

ORAL HERPES (COLD SORES, HERPES SIMPLEX-1)

> "I need to tell you how the short time I was on **LARREA** it changed my life. My family, husband and son are so plagued with the mouth sores, we become very ill and have all the symptoms of a very bad flu. I was getting sick at twice a month lasting 10-14 days, in other words constant illness, muscle fatigue, tired, etc. Your product slowed the virus down. I am now at breakouts less than once a month but not quite as ill., " S.B., IL

A healthy male, age 70 suffers from Herpes Simplex I outbreaks which present as skin rashes/lesions with itching.

> "In infancy mother would kiss on forehead with cold sore on lip. Primary outbreak on forehead, 1954 while in service with Army medical corps. Unsuccessful treatment at that time. Outbreaks now occur every other week during summertime in form of discrete blisters on forehead down to temples. Two to four capsules of **LARREA** and application of the topical lotion as needed will clear the

rash over a 24-36 hour period." B.W., CA

A healthy 67-year old male has had fever blisters since childhood. The lips swell and fever blisters appear. It usually takes 7-8 days for them to heal. Patient reports that he hasn't had an outbreak since using the capsules.

" The capsules so far have seemed to help prevent the outbreak of fever blisters." G.S., FL

A male, 54-years of age used to have chronic HSV-1 breakouts (over 6 a year). He had tried grape seeD extract, oil of oregano, lysine and others with no success. He has been using **LARREA** at 2 capsules a day to keep it (the breakouts) under control. He uses the topical lotion if he feels any "tingle" and its taken care of.

"**LARREA** is a superior product, because it's the only thing that works".

Also, the patient has had prostate trouble in the past, being diagnosed with cancer in 1996 at the age of 49. He took treatments to take care of the cancer. But he had chronic prostate infections. Antibiotics did not stop the infections. Since he has been taking the **LARREA**, there have been no more infections. (report summarized) -- T.B., PA

A male and female, both 44 years of age and healthy, reported utilizing the original capsules and original lotion sporadically, several times a year as needed. One suffers from HSV-1 (cold sores) and the other suffers from HSV-II (genital herpes). Both reported pain levels of 8 on a scale of 1-10 before using **LARREA**. After just 24 hours of using **LARREA** the pain level was reported at 2.

"It's miraculous - have suffered all my life until finding this product - will spread the good news." M.H., AZ

A female, age 32 has cold sores.

"When I feel the tingling sensation, I take one capsule two times a day and I use the lotion six times a day. Within 24 hours the lotion

provides immediate improvement, usually preventing the cold sore from forming completely. Pain goes from 7 on a scale of 1-10 to a 2 after using **LARREA**." D.E.

SHINGLES (HERPES ZOSTER)

A 76-year old male suffers from herpes zoster (shingles).

> "Experience "flu like" symptoms for 24 hours then skin blisters at 72 hours. Blisters from center front of chest all the way around to center of back (on right side) starting underneath (4" downward) right breast. Pain has continued for 6 months without any let up in the severity of the pain. Postherpetic neuralgia pain clear down to bone - nerve endings painful. I could not stand or walk erectly without severe pain. Pain was 10 on a scale of 1-10. Used Lidoderm patches which helped ease the pain as long as they were in place (approx. 12 hours) - but pain comes back with increased severity when patches are removed - stopped using the patches. Took 2 **LARREA** capsules daily for 3.5 days and application of lotion at same time I took the capsules. On the morning of the fifth day the pain was completely gone. The pain left in 72 hours." M.B.E., OK

A male, 55 years of age has herpes zoster (shingles) and possible candida yeast infection, which result in apparent skin rashes on the legs. The severity of pain reported before the use of **LARREA** was 7 on a scale of 1-10. Within 1 week the patient reported an improvement in pain severity to a level of 1. Lesions cleared within 24 hours.

> " Thank you so much for your help." A.A., QLD, Australia

A 66 year-old male has suffered since 1996 with herpes zoster on the right side of the head and eye and has post-herpetic neuralgia and lichenification. Before beginning a regimen of **LARREA** products, the patient reported pain was reported at a level 5 on a scale of 1-10 and lesion severity as 4. After using the **LARREA** capsules twice per day and topical lotion approximately 3 times a day for three weeks, the pain was reported at 0 to 0.25 and the lesion severity at 2.5. Results were noticed within 24 hours for the post-herpetic neuralgia and 3 weeks for the lesions.

"I recently purchased your capsules an ointment for my post-herpetic neuralgia which I have suffered from since an attack of herpes zoster in July 1996. There has also been a rash or lichenification since my shingles attack which resides on the right side of my head and eye. Your ointment provided immediate relief for my pain and my rash seems to be disappearing: the results are very encouraging." H.E., MA

A male, age 46 has bouts of shingles. Itching reported at an intensity of 10 before applying **LARREA** and reported as 0 after use of **LARREA**.

"Intense itching on inner thigh and rash with inflamed areas on the stomach. Almost immediately, itching lessened to point not noticed until waking from sleep, where it is only moderate, then disappears in the day after the ingestion of capsule. Immediate improvement -- it works. I can tell that the application is fighting off the virus." K.F.

GENITAL HERPES (HERPES SIMPLEX-2)

A healthy female, age 35 years was diagnosed with herpes simplex II and has suffered for over 15 years. The condition seems now to have become herpes zoster; breakouts presently at the base of the spine. The patient is under a physician's care and has been instructed to take two **LARREA** capsules per day and apply the lotion as needed (2-4 times per day during outbreak).

"Breakouts appear just below the waistline in the form of blister patches. The pain is like glass growing out of the skin, but these products help so much!!! Immediate improvement (3 days) – thanx". C.S., CA

A 62-year old female suffers from herpes simplex and utilizes the **LARREA** capsules daily for prevention. She reported pain at a level of 8 prior to beginning **LARREA** and at a level of 2 after using it.

"It is wonderful. I'm so thankful." M.T., GA

Female patient, age 44 using **LARREA** capsules and topical lotion for

herpes Simplex II (genital herpes) cervical lesions and thigh sores. The severity of the lesions and the pain was rated on a scale of 1-10 before treatment. The patient reported lesion severity at 9 and pain at level 3. Within one week of topical application and two weeks of the 2 capsules per day regimen the burning sensation on the cervix and the thigh pain were gone. Pain rated at 0 and severity of lesions rated at 3 after use of the **LARREA** products. M.A.W.

IMMUNE DISORDERS (LUPUS, MULTIPLE SCLEROSIS, ETC.)

A female patient, age 49 was diagnosed in 1999 with Stiffman's Syndrome, a very rare auto-immune disease. Body stiffness required the patient to walk with a cane and seek various medical treatments to address the medical complications of the disease. The patient also suffers from herpes simplex infections on the lips. The patient reported a pain level of 8-10 before beginning a daily regimen of 2 **LARREA** capsules. After taking the pills for two and a half days, the patient reported walking without a cane and no pain (level 0 reported).

> "I am climbing up on ladders and washing windows, my toes are relaxed and knee pain is gone. I have better balance. I am telling everyone who sees me walk that your miracle 12000 year old pill is a life saver. Thank you. I will stay on **LARREA**. Praise God!" J.A.R., WI

An immune compromised female, age 64 has a history of lupus.

> "I suffer from an occasional, but severe body rash which - when treated with cortisone alone - lasts up to 8 weeks. The huge red splotches and sores sometimes burn and itch. They exist from the right side of the waist down to the thigh and up to the breast and around the back. The left side is the same but not as severe. On a scale of 1-10, when the condition gets out of hand the pain is rated at 7 and the lesion severity at 9. When using the **LARREA** spray several times a day, it takes about three days before I become comfortable. The rash "hit me" on the night of Aug. 12, shortly after midnight. I immediately began using the **LARREA** penetrating spray (several times during the night) and continued for the next week or

so. Today is Aug. 22nd and I'm okay. Using no cortisone." M.H.

A 31 year- old female has multiple sclerosis and is under the care of a physician. Her doctor has recommended a daily regimen of 2 **LARREA** capsules per day and has been able to keep the case in remission.

> "I now have no pain. When I feel weakness, **LARREA** improves my condition in 1-2 days (3 at the most). I feel that it maintains my health." D.K., WI

CHICKENPOX

> "I used **LARREA** topically for my son's chickenpox. I also gave him microhydrin. Except for the few blisters I missed the first day, after using the above regimen the outbreak was minimal and there was absolutely no itching, ever! I asked many people if they've known anyone not to have itching. In every case they looked at they had not heard such a thing. The ordeal was over inside a few days. The large eruptions so common with this illness mostly appeared like small mosquito bites." D.G.

NERVE CONDITIONS (TRIGEMINAL NEURALGIA)

A female, age 70 has been diagnosed with trigeminal neuralgia which affects the right side of her face and forehead and around the eyes. She experiences burning pain and it is triggered by wind. She takes 2 **LARREA** capsules per day and found immediate improvement.

> "At present I do not have the pain, but I have had the pain about every four months and lasted a long time. A neurologist diagnosed as trigeminal neuralgia and I was prescribed tegretol, but I really never had relief until I started with this treatment. I wish I had heard about **LARREA** approximately 7 years ago." O.C., TX

SUMMARY

Treating Herpes Naturally describes a powerful natural remedy for herpes infections, which comes from the creosote bush (*Larrea tridentata*),

a common desert shrub of the southwestern United States and adjacent Mexico. *Larrea* is remarkable for its ability to live for up to 12,000 years in a harsh environment and dominate its neighbors without being eaten and without being infected with some kind of fatal disease. The survival of this plant depends on a chemical arsenal to fend off its potential enemies, an arsenal that Native Americans have used in their folk medicine to fight off human disease.

The folk medical uses of *Larrea* have included the treatment of digestive disorders, rheumatism, venereal disease, sores, bronchitis, chickenpox, influenza, and the common cold. Thus, the observation that *Larrea* has antiviral activity against herpes (as chickenpox and possibly as sores) is centuries old. In more modern times, *Larrea* has been effective in treating arthritis, cancerous tumors, HIV, oral and genital herpes, shingles, Kaposi's sarcoma, impaired liver metabolism, dry skin, brittle hair and nails, and digestive disorders involving fats in the diet. Moreover, certain ingredients from the leaves of *Larrea* fight the damaging effects of oxidants, the deadly bleaching chemicals that our cells make when they become aged or diseased.

Herpes viruses inflict widespread suffering around the world. Some type of herpes virus will affect almost everyone during his or her lifetime. Herpes viruses cause many kinds of afflictions, including oral sores, genital sores, chickenpox, shingles, Kaposi's sarcoma, and Epstein-Barr syndrome. In all, there are at least nine types of herpes viruses that affect human health. Unfortunately, since these viruses are not alive, they cannot be killed or otherwise affected by antibiotics. Herpes viruses are particularly troublesome because we cannot rid our bodies of them. They mostly lie dormant in our nerve cells, blooming at different times, or sometimes not at all, depending on the strength of our immune system. Outbreaks can occur when the immune system is suppressed by physical or emotional stress that is caused by anxiety, smoking, poor nutrition, recreational drug use, hard exercise, injury, surgery, UV radiation from sunlight or from tanning booths, aging, and many other factors that are common in our modern times.

Scientists have collected different kinds of data recently that corroborate the folk medical use of *Larrea* against herpes. These data

come from clinical tests, from laboratory studies, and from biochemical comparisons with the chemicals of *Larrea* that are also found in other plants. *Larrea* has been found to produce flavonoids and lignans that have activities as antiviral compounds, as cellular enhancers, and as immunostimulants.

Larrea extracts applied topically have healed oral and facial blisters in less than 24 hours, where symptoms would normally last 3-7 days. *Larrea* preparations taken internally have reversed the symptoms of shingles and prevented recurrent outbreaks. *Larrea* extracts applied topically have reversed outbreaks of genital herpes within 48 hours. HIV-positive people have used *Larrea* extracts topically to shrink lesions caused by ongoing Kaposi's sarcoma on their feet or legs within 1-2 weeks of daily application. HIV-positive people have used *Larrea* both topically and internally to clear lesions from severe, ongoing cold sores, genital herpes infections, and shingles, and to prevent subsequent outbreaks. Recent studies have shown that *Larrea* extracts eliminated the growth of herpes viruses in cultured cells of humans and monkeys, whereas cells in cultures that were grown without *Larrea* extracts were destroyed by viral infection within 72 hours.

More than 200 tons of *Larrea* have been sold since 1975, with fewer than two dozen reports of potential side effects against liver function. Although this represents a very small fraction of the users of this plant, it suggests, at the very least, that people who already have liver problems should be cautious. If need be, such people should enlist the help of their health care practitioners to monitor their liver metabolism while using *Larrea* internally.

APPENDIX A: INFORMATION RESOURCES

You can find dozens of books and thousands of journal articles about herpes at any university research library. The most informative sources of information for the public are available by phone or by Internet. The government-supported Center for Disease Control and Prevention in Atlanta offers updated information on the occurrence of many viral diseases in the U.S. The CDC's phone numbers for public inquiries are (404) 639-3534 and (800) 311-3435. This is the computer age, so you can also reach the CDC via Internet (http://www.cdc.gov).

If the CDC is too bureaucratic for you, your best recourse is to get onto the information highway and surf the Internet. By late 1996 a search using 'herpes' as the keyword on a major search engine found more than 15,000 documents; by early 1999 this had increased to over 105,000, and by the second half of 2003 it had reached more than 1 million. One of the best websites found by such searching is the Herpes Resource Center, which is hosted by the American Social Health Association. This site may be the most comprehensive information resource about herpes and related viruses nationwide, including self-help, dietary guidelines, advice, letters, and much more. You can see what this organization has to offer by phone (919/361-8400) or online at http://www.ashastd.org/stdfaqs/herpes.html.

For completeness, I suggest that you also visit the GlaxoSmithKline herpes page (http://www.herpeshelp.com/) to see what they've got to say. I also find it very instructive to check out patents of the drugs that I might be interested in, which you can do, too, at the U.S. Patent and Trademark Office online (http://www.uspto.gov/). Just for fun, you might try looking up the GlaxoSmithKline patents that I cited earlier, as well as the patent on the chickenpox vaccine, Varivax® (No. 4769239, "Vaccine against varicella-zoster virus").

APPENDIX B: IMPORTANCE OF PLANT NAMES

Remedies from medicinal plants depend on the correct identification of the herbs involved, which puts a great deal of importance on the correct use of plant names. "Common" names, such as creosote bush, are the

unofficial names of plants; "scientific" names, such as *Larrea tridentata*, are their official names. Common names are informative and easy to remember: the common name of the creosote bush comes from the creosote-like resin on its leaves and stems. (True creosote comes from pine tar or coal or the inside of your chimney, but it has nothing to do with the creosote bush.) The main problem with common names is that any plant can have more than one common name, and any common name can refer to more than one plant. The creosote bush, for example, is also called greasewood, gobernadora, hediondilla, paloondo, and Kreosotstrauch. In addition, for some strange reason, some practitioners refer to it as chaparral tea, although "chaparral" means a thicket of shrubs of many different kinds of plants (creosote bush is not even one of them!). It is botanically incorrect to refer to the creosote bush as chaparral tea.

The multiple and sometimes incorrect uses of unregulated common names leads to confusion and misinformation, which can cause misrepresentation of medicinal plants. In contrast, the use of scientific names averts such problems because scientific names are unique: each kind of plant has only one scientific name and each scientific name can refer to only one kind of plant. Botanists must follow a strict code for naming plants scientifically, whereas no such code governs the use of common names.

As I mentioned before, the scientific name of the creosote bush is *Larrea tridentata*. The full name is italicized to emphasize that it is in Latin; all scientific names must be in Latin. Both parts of this name are essential for it to be unique, since there are other kinds of *Larrea* (such as *Larrea divaricata* of Argentina) and other kinds of *tridentata* (for example the sagebush, *Artemisia tridentata*).

It may seem a bit snobbish to use scientific names, but this is the best way we have to keep track of the 300,000 kinds of plants that have been discovered so far, without getting bogged down trying to decide which common names refer to which plants. This "name game" is especially important in medical botany: names like ginseng, hawthorn berry, feverfew, chamomile, cat's claw, and even chaparral, each refers to more than one kind of plant, sometimes including plants with little or no medicinal value.

APPENDIX C: NATIVE AMERICAN MEDICAL USES OF LARREA*

Tribes with documented uses:

Arizona - Papago, Pima, Yavapai, Hualapai
California - Coahuilla, Diegueno, Kawaiisu, Mahuna
Nevada - Paiute, Shoshoni
New Mexico - Isleta

Specific Native American uses of *Larrea*:

CHICKENPOX

Paiute - Infusion of leaves used as a wash for chickenpox.

COLD MEDICINE

Cahuilla - Infusion of stems and leaves used for colds.
Hualapai - Infusion of leaves taken or leaves steamed for colds.
Paiute - Decoction or infusion of leaves taken as a cold medicine.
Pima - Decoction of plant resin taken for colds.
Shoshoni - Decoction of leaves taken for colds.
Yavapai - Decoction of leaves and stems taken for sore throat.

SKIN DISORDERS

Cahuilla - Crushed leaf powder applied to sores and wounds.
Cahuilla - Decoction or poultice of leaves used on open wounds.
Isleta - Leaves used in shoes to absorb moisture.
Mahuna - Infusion of plant used for dandruff.
Paiute - Compound decoction of leaves with badger oil used as a salve for burns.
Paiute - Dried, powdered leaves sprinkled on sores.
Papago - Plant used for poisonous bites and sores.
Papago - Dried, powdered leaf rubbed on infant's navel to promote healing.
Papago - Poultice of chewed leaves placed on insect bites, spider bites, scorpion bites, snakebites and sores.
Papago - Poultice of dried, powdered leaves applied to infant's navel.

Pima - Infusion of plant used as wash for impetigo sores or dandruff.
Pima - Poultice of leaves applied to scratches, wounds, sores and bruises.
Yavapai - Decoction of leaves and stems used as a wash for cuts and sores.
Yavapai - Dried, pulverized leaves used for sores.

ARTHRITIS, RHEUMATISM and PAINFUL JOINTS - EXTERNAL

Cahuilla - Plant made into liniment used by elderly people for swollen limbs caused by poor blood circulation.
Diegueno - Decoction of leaves used as a bath for rheumatism, painful arthritis, aching bones and sprains
Kawaiisu - Decoction of leaves used as a wash for sore and aching parts of the body.
Kawaiisu - Poultice of heated leaves applied to aching limbs.
Isleta - Decoction of leaves used as a body bath for rheumatism.
Paiute - Infusion of leaves used as a wash for rheumatism.
Papago - Plant used for stiff limbs.
Papago - Green branches laid on ashes, aching feet and stiff limbs held in smoke.
Papago - Smoke from smoldering green branches used for sore feet.
Papago - Poultice of heated branches applied for rheumatism.
Papago - Poultice of heated branches applied to joints.
Pima - Infusion of leaves taken for pain or used as bath and rub for rheumatic pains.
Pima - Poultice of heated branches and leaves applied for pain.
Pima - Infusion of leaves used as bath and rub or poultice applied to rheumatic pains.
Yavapai - Decoction of leaves and stems used as wash for rheumatism.

RHEUMATISM, PAIN, HEADACHE and FEVER - INTERNAL

Paiute - Decoction of leaves taken for bowel cramps.
Pima - Decoction of leaves taken as an emetic for high fevers.
Pima - Decoction of twigs taken for gas pains or headaches caused by upset stomachs.
Pima - Infusion of plant taken for rheumatism.

DISINFECTANT/ANTISEPTIC

Cahuilla - Decoction or poultice of leaves used to draw out poisons and for infections.
Hualapai - Infusion of leaves used as a disinfecting skin cleanser.
Isleta - Decoction of leaves used as a disinfectant.
Kawaiisu - Plant used for the antiseptic properties.
Mahuna - Infusion of plant used as a disinfectant and deodorizer.

ASTHMA, CONGESTION, CHEST INFECTIONS

Cahuilla - Infusion of stems and leaves used for chest infections.
Cahuilla - Infusion of stems and leaves used as a decongestant for clearing lungs.
Cahuilla - Leaves boiled or heated and the steam inhaled for congestion.
Hualapai - Infusion of leaves taken or leaves steamed for congestion and asthma.

BOWEL PROBLEMS

Cahuilla - Infusion of stems and leaves used for bowel complaints.
Coahuilla - Infusion of leaves taken for bowel complaints and consumption.
Mahuna - Plant used for stomach cramps from delayed menstruation.
Paiute - Decoction of leaves taken for bowel cramps.
Pima - Decoction of branches taken for gas caused by upset stomach or gas pains.
Pima - Plant gum chewed and swallowed as an antidysenteric and intestinal antipasmodic.
Pima - Decoction of plant taken for stomachaches and cramps.
Pima - Plant gum chewed and swallowed as an intestinal antispasmodic.

ORAL RINSE, TOOTHACHE

Pima - Decoction of gum used as a gargle.
Pima - Infusion of plant held in the mouth for toothaches.

DIURETIC

Pima Drug - Infusion of leaves taken for dysuria (difficulty in passing urine).
Shoshoni - Decoction of leaves taken to "stimulate urination."

VENEREAL DISEASE

Paiute - Compound decoction of leaves taken for gonorrhea.
Shoshoni - Decoction of leaves taken for venereal disease.
Yavapai - Decoction of leaves and stems used as a wash for gonorrhea.
Yavapai - Whole leaves used on penis for gonorrhea.

EMETIC

Cahuilla - Infusion of stems and leaves used, in heavy doses, to induce vomiting.
Papago - Decoction of leaves taken as an emetic.
Pima Drug - Decoction of leaves taken as an emetic.
Pima - Decoction of leaves taken as an emetic for high fevers.

CANCER

Cahuilla - Infusion of stems and leaves used for cancer.

GYNECOLOGICAL AID

Cahuilla - Infusion of stems and leaves used for stomach cramps from delayed menstruation.
Papago - Branches used as bed for women with menstrual cramps or after childbirth.
Papago - Infusion of leaves used on breasts to start milk flow.
Papago - Poultice of heated branches applied to facilitate childbirth.

TUBERCULOSIS

Coahuilla - Infusion of leaves taken for consumption and bowel complaints.
Pima - Decoction of gum taken for tuberculosis.

GENERAL MEDICAL USE

Pima - Plant used to cure everything.
Kawaiisu - Plant used for medicinal purposes.
Pima - Smoke from plant used for weakness and laziness.
Pima - Poultice of boiled leaves used for unspecified purpose.
Cahuilla - Infusion of stems and leaves mixed with honey and used as a general health tonic before breakfast.
Paiute - Plant used for many different illnesses and considered a "cure-all."

VETERINARY

Coahuilla - Plant given to horses for colds, distemper or runny nose.
Kawaiisu - Decoction of leaves used for collar sores on draft animals.

*Compiled from information obtained at: http://herb.umd.umich.edu

APPENDIX D: RECENT U.S. PATENTS ON LARREA

Author's Note: Larreacorp was granted priority status for their patent applications based on documented utility using *Larrea*-derived products to control secondary infections, caused by herpes viruses, in volunteer patients with full-blown AIDS. Larreacorp has licensed its patents to Larrea Biosciences in Houston, TX.

Target: Herpes Viruses

U.S. Patent 5,837,252 Issued 17 November 1998 to Larreacorp, Ltd.

Broad patent coverage of a method of treating herpes lesions and herpes viruses in humans using an effective amount of an extract of Larrea tridentata.

U.S. Patent 5,945,106 Issued 31 August 1999 to Larreacorp, Ltd.

Broad patent coverage for a method of treating herpes viruses and

symptomatic herpes virus lesions of the group: herpes simplex 1 (cold sores), herpes simplex 2 (genital herpes), varicella-zoster virus (chickenpox, shingles and post-herpetic neuralgia), human herpes virus 4 (Epstein-Barr virus, mononucleosis), human herpes virus 5 (cytomegalovirus), human herpes viruses 6 and 7 (roseoloviruses), and herpes virus 8 (Kaposi's sarcoma).

U.S. Patent 6,004,559 Issued 21 December 1999 to Larreacorp, Ltd.

Covers formulations containing *Larrea tridentata* as a herpes treatment agent.

Target: Inflammatory Diseases

U.S. Patent 6,039,955 Issued 21 March 2000 to Larreacorp, Ltd.

Involves treatment of inflammation and inflammatory disease. Specifically includes: asthma, psoriases, allergic rhinitis, rheumatoid arthritis, inflammatory bowel disease, inflammatory pain, cystic fibrosis, adult respiratory distress syndrome, glomerulonephritis, inflammation of the skin, virally induced inflammation and inflammation induced by any of contact allergens, ultraviolet light, and thermal exposure.

Target: Diabetes

U.S. Patent 5,827,898 Issued 27 October 1998 to Shaman Pharmaceutical Company

Involves methods for treatment of non-insulin-dependent diabetes mellitus, for reducing blood glucose levels, or hyperglycemia using compounds extracted from *Larrea tridentata*.

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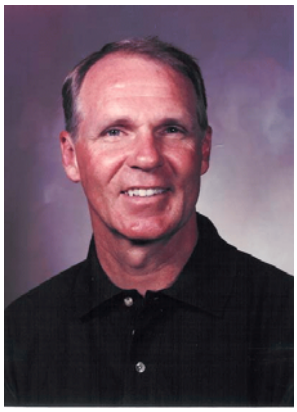
ABOUT THE AUTHOR



W. Dennis Clark earned his bachelor's degree in biological sciences at Sacramento State College, emphasizing plant classification and ecology, and his Ph.D. in botany at the University of Texas at Austin, specializing in plant chemistry. Dr. Clark was on the faculty of Plant Biology at Arizona State University, 1976-2006. He is currently Adjunct Professor at the Southwest College of Naturopathic Medicine in Tempe, AZ. He has also been a Research Fellow of the Alexander von Humboldt Foundation and the National Science Foundation and has held research appointments as Visiting Professor at the Institut für Pharmazeutische Biologie, Universität Heidelberg, Germany, and at the Department of Botany and Plant Sciences, University of California, Riverside. He has published numerous scientific articles on the chemistry, classification, ecology, and evolution of plants. His specialties are flavonoids, especially their functions in plants and their roles in medicinal plants, and the molecular evolution of genes that control their biosynthesis. Dr. Clark has been an educator for the past 35 years. During that time he has co-authored a best-selling college-level textbook on botany and taught courses in general botany, medical botany, plant chemistry, plant evolution, and the pharmacology of natural drugs.

ENDNOTES

Dr. Clark provides an engaging and exciting description on a promising new natural therapy for sufferers of herpes virus infections.

> Michael D. Murray, N.D., co-author of ***Encyclopedia of Natural Medicine*** and ***Botanical Influences on Illness***

Dennis Clark, a plant biologist has put together a concise, informative book about herpes -- a condition affecting many people. If you were ever in the dark regarding viruses, this book will illuminate and answer any questions you may have had. Clark's team of researchers has performed case studies on a desert herb which may be far superior as a complementary treatment than today's synthetic drugs. I highly recommend this book.

> Cynthia Olsen, author of ***Australian Tea Tree Oil Guide***, 3rd edition, and ***Essiac: A Native Herbal Cancer Remedy***, Winner of the 1997 Small Press Award

W. Dennis Clark's book, ***Treating Herpes Naturally with Larrea Tridentata****, is a great introduction for the layperson to the problems associated with herpes virus infections and their treatments. Dr. Clark has the unique ability to assimilate the large bodies of literature concerning both plants and viruses and pull them together in a concise and accurate manner. One is left with the appreciation that botanicals such as the creosote bush still have great promise as alternatives to current antivirals.*

> David C. Bloom, Ph.D., professor of microbiology and herpes researcher

WHERE TO GET PATENTED LARREA PRODUCTS

The patented products that were developed in my university laboratory are not yet widely available in retail stores. However, they are available at my online store at Doctors Nutrition Center. They are listed under the Herpes, Shingles, Cold Sores category.