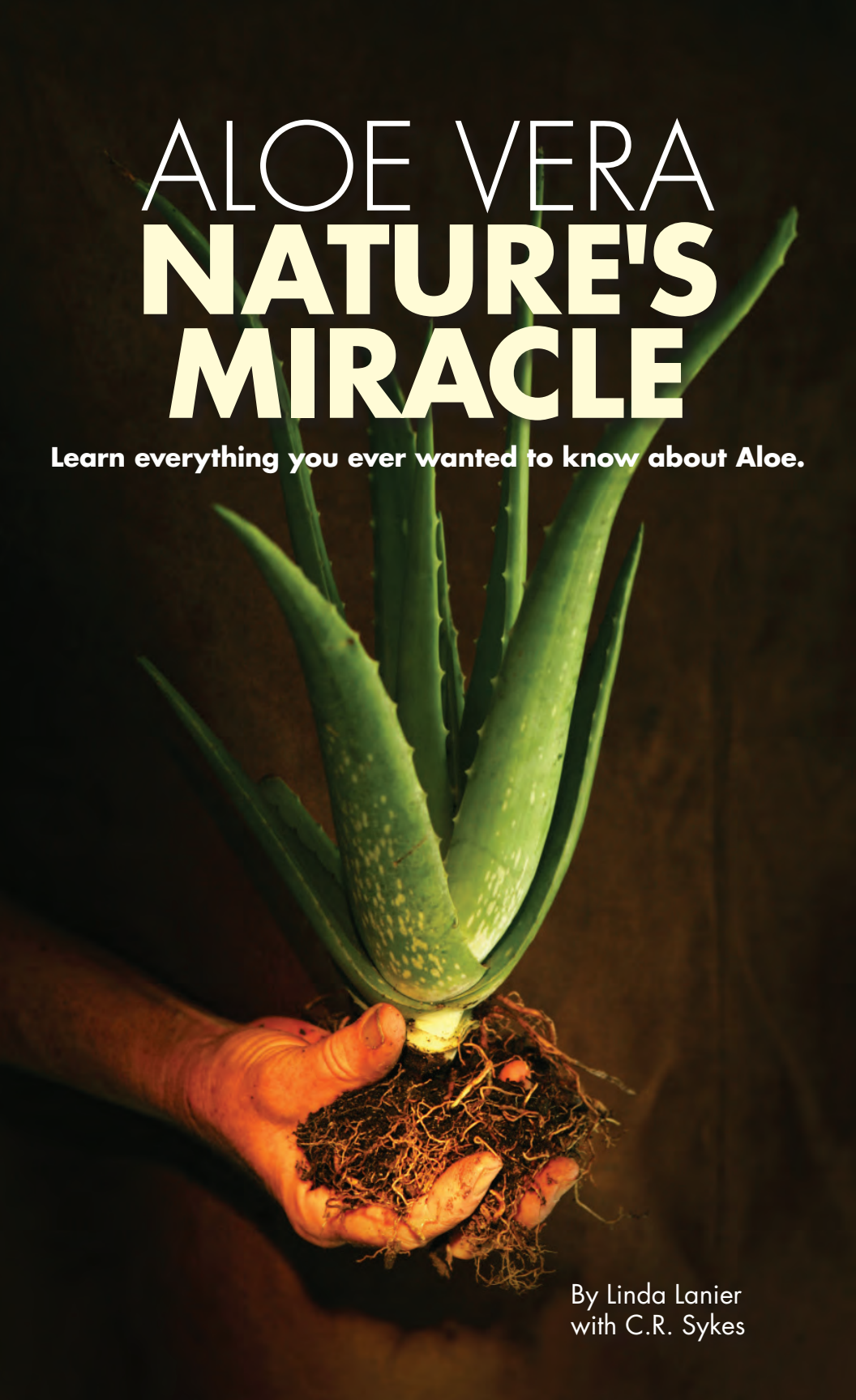
ALOE VERA
NATURE'S MIRACLE

Learn everything you ever wanted to know about Aloe.



By Linda Lanier
with C.R. Sykes

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The information in this book has been compiled from many resources, including scientific research articles, professional magazines and journals, books, and videos. For references, see back of book.

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Jess and Evelyn Clarke, founders of The Aloe Institute.

Preface

This book was made possible by generous funding from **The Aloe Institute** of Bradenton, Florida. **The Aloe Institute** (www.thealoeinstitute.org) was endowed in 1996 by Jess and Evelyn Clarke of Allentown, Pennsylvania, to perpetuate the strong Clarke family desire to aid society through knowledge and research on the aloe vera plant. Their lifelong use of the aloe plant was passed on to their children and inspired one of their sons, Jess F. Clarke, Jr., to start and operate a successful aloe vera consumer products company.

Now led by Jess and Evelyn's children, Jess Jr., Jane and Ellen, **The Aloe Institute** is a non-profit organization dedicated to improving health and wellness globally. Their commitment to The Institute effort underscores the family's ongoing appreciation for the quality of life aloe brought them.

As a non-profit institution, **The Aloe Institute's** focus lies in underwriting the most promising aloe research while promoting its clinical and organic benefits through ongoing educational outreach. Landmark studies have already proven the therapeutic value of aloe, and the institute continues to pursue new avenues of research to enlarge on the ever-growing body of knowledge pertaining to the ancient aloe.

Such recent research efforts of Dr. Nicholas Danhof and Dr. Mildred Acevedo-Duncan, two talented doctors working under separate Institute grants, have contributed to some of the most encouraging aloe discoveries to date. Dr. Danhof is exploring aloe's role in controlling blood sugar levels in Type II diabetics. Dr. Acevedo-Duncan is continuing her research using emodin, the outer portion of the aloe plant, to destroy brain cancer cells.

Currently, the institute is sponsoring science programs for children and nationwide research to examine the effects of aloe on a wide variety of illnesses including cancer, AIDS, heart disease, and more. Additionally, other grants helped fund research into the causes of and possible solutions to macular degeneration.

In order to expand our outreach impact in the world, **The Aloe Institute** is constantly seeking new and enhanced sources of funding. To serve new and ongoing mission needs, **The Aloe Institute** graciously welcomes all tax-deductible contributions, planned and monthly giving and one time donations. Giving is easy; simply visit the website at www.thealoeinstitute.org and follow the "Donate" link to make the contribution most appropriate for your wishes. **The Aloe Institute** is a 501(3)c non-profit organization, making all contributions fully tax-deductible.

Every tax-deductible dollar you contribute to **The Aloe Institute** unlocks more secrets, more cures, and more health benefits hidden within one of the most common plants on the planet. Thanks to the Clarke family's generous endowment capable of sustaining our administrative activities, **The Aloe Institute** been able to ensure that 100% of all financial contributions go directly into research grants and programs focused on aloe vera education.

Please enjoy this publication and recommend it to your friends and family. It is also available for sale through the website and on Amazon.com.

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RESEARCH AND EDUCATION

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ALOE ACROSS THE AGES

2200 B.C. Sumerian clay tablets mention whole-leaf aloe as laxative agent.

1550 B.C. Egyptian Papyrus Ebers contains aloe-based medications used to treat both internal and external conditions.

400 B.C. Aloe is traded extensively throughout western Asia. Plants are grown and used in India.

330 B.C. Legend claims Alexander the Great discovers aloe on the island of Socotra and uses its gel to treat his soldiers' wounds.

50 B.C. Aloe is introduced into Western medicine by the Greek physician Celsius.

41–68 A.D. Dioscorides' "Greek Herbal" provides the first detailed description of the aloe vera plant.

200 A.D. Aloe used extensively in Roman medicine.

700–800 A.D. The Chinese "Materia Medica" details aloe's first use in China.

1000–1300 The use of aloe extends into Europe, where it is widely accepted as a healing agent.

1300–1500 Dried aloe sap is introduced into English medicine, primarily for use as a laxative and as a treatment for external conditions.

1500–1600 Aloe is brought by Spanish conquistadors and missionaries to the New World.

1820 The United States Pharmacopoeia officially lists aloe as a purgative and a skin protectant.

1900 Aloe plants are grown commercially globally for sap. Sold to treat radiation burns, ulcers, dermatitis and other skin injuries and ailments.

1934 First modern medical paper is published in the United States by C.E. Collins. Paper describes use of whole aloe leaf to heal radiation dermatitis.

ALOE ACROSS THE AGES

1953 C.C. Lushbaugh, MD, and D.B. Hale, BS, show that aloe vera heals ulcers and radiation dermatitis in test animals 50% faster than other treatments.

1980 John Heggers, MD, Chicago Burn Center, demonstrates aloe vera heals burns and frostbite faster than an accepted medical treatment. States aloe eliminates scarring and regenerates hair follicles, allowing for regrowth of hair in burned region.

1981 International Aloe Science Council is founded to establish purity and manufacturing standards.

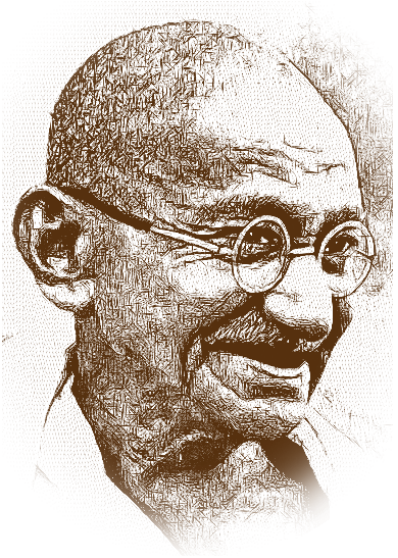
1985 Jeffrey Bland, PhD, Linus Pauling Institute, shows that drinking aloe vera juice improves protein digestion; helps normalize bowel habits; controls yeast infections; promotes balanced digestive bacteria; relieves indigestion, irritable bowel syndrome, colitis and acid stomach and concluded that aloe juice has no toxic effects.

1986 Doctors at King Saud University, Saudi Arabia, state that dried aloe sap is used in the Arabian peninsula to lower blood glucose in diabetic patients. Paper concludes aloe contains a hypoglycemic agent that lowers blood glucose.

1989 The Cosmetic, Fragrance, and Toiletry Association states that aloe is the most popular cosmetic and toiletry ingredient in the US by far; named number one by more than 33% of consumers.

1992 Dr. James Duke, US Department of Agriculture, approves the use of aloe mannose as a treatment of soft tissue cancer in animals and feline leukemia.

Today Science is continuing to develop a deeper understanding of benefits of aloe, which is becoming increasingly regarded for its natural curative powers. Additionally, today's skyrocketing health costs are causing people to seek less expensive treatments and preventive measures that are also safe and natural.



"You ask me what were the secret forces which sustained me during my long fasts. Well, it was my unshakable faith in God, my simple and frugal lifestyle, and the Aloe whose benefits I discovered upon my arrival in South Africa at the end of the 19th century."

Mahatma Gandhi

(letter to biographer Romain Rolland)

CHAPTER 1

Ancient Old Wives' Tales

"Ouch!" yelped Priscilla as the hot bacon grease popped and painfully peppered her hand. While she wouldn't die from it, the burn really hurt. Quickly turning down the gas stove, she walked over to the windowsill where one of her mother's house-warming gifts resided.

Mom had insisted every home should have an aloe plant—it was a home remedy she had learned about from her mother, who had learned about it from her mother, who learned about it from her mother and so on.

Her mom called the aloe plant Mother Nature's miracle, and steadfastly insisted it was better than any fancy drug store medicine or ointment.

Grabbing a paring knife from the counter, Priscilla quickly sliced off one of the larger leaves, slit it open and began spreading the inner gel over her burn.

As the cool fluid oozed over the top of her hand, she could almost feel her mother's reassuring touch gently spread the inner gel over the burn. Instantly it felt better.

"Just rub some aloe on it and it'll feel better," her mother's soothing words echoed back from her childhood.

Priscilla smiled quietly to herself as she looked out the window into the back yard where her ten-year-old daughter Amy was playing with her younger brother. Priscilla knew that someday her daughter would look back to her childhood and remember when her mother had told her about Mother Nature's miracle plant.

***

Have you ever wondered where the all the old home remedies surrounding the healing powers of plants and herbal concoctions come from?

Millennia ago, before countries existed, before cities, before

roads, before even the written word, ancient peoples began to discover the power of plants to heal disease and ease discomfort.

How long has humanity practiced herbal medicine? No one knows for certain; but we are sure that the medicinal use of plants predates written history.

In Shanidar Cave, a 60,000-year-old Neanderthal burial site in norther Iraq, archaeologists unearthed ten adult skeletons. Of the ten, number 4, or Shanidar IV, provided some tantalizing clues into the possibility that herbal medicine was being practiced actively by the pre-humans of that era.

In routine samples taken from soil surrounding the Neanderthal skeleton, large clumps of pollen were discovered. One possible theory to account for this was that Shanidar IV may have been a shaman and his body interred with entire flowering plants significant to his profession.

Analysis determined that the plants, yarrow, cornflower, bachelor's button, St. Barnaby's thistle, ragwort or groundsel, grape hyacinth, joint pine or woody horsetail, and hollyhock, may have been used for their medicinal properties as diuretics, stimulants, astringents and anti-inflammatories.

While it is certain that early humans employed plants medicinally, actual evidence is scarce. But it is reasonable to presume that by the end of the Stone Age and the dawning of the Neolithic period—roughly 10,000 years ago—humans had gained enough knowledge about their

environments to realize the importance of plants.

In September of 1991, the frozen remains of Ötzi the Iceman were discovered by two German tourists high in Ötztal Alps on the Austrian-Italian border. At first Ötzi was mistaken as the victim of a mountaineering accident and Austrian authorities used a jackhammer to remove the body Only later was it discovered that the corpse was 5,300 years old.

The corpse and his possessions were remarkably well preserved; scientists later determined Ötzi had eaten ibex for dinner only a few hours before his death and suffered from an infestation of a parasitic whipworm.

Among his various possessions was a pouch that contained a mushroom called *Piptoporus betulinus*, commonly available in the alpine environment. What is interesting is that *Piptoporus betulinus*, if ingested, can trigger short bouts of diarrhea. It also contains oils known to be toxic to certain parasites.

Today archaeologists believe that Ötzi probably treated his

The first detailed discussion of the medicinal value of aloe is believed to be found in the Papyrus Ebers, an Egyptian document written about 1550 BC. It provides 12 formulas for mixing aloe with other ingredients to treat internal as well as external disorders.

In ancient Greece, Dioscorides a physician, botanist and pharmacologist, wrote a five-volume encyclopedia known as a pharmacopeia, which included herbal medicine and related medicinal substances. Widely read for more than a thousand years, it contained the first detailed description of aloe vera, in which aloe juice was recorded to have the "power of binding and inducing sleep," and the whole leaf to "stop bleeding of many wounds."

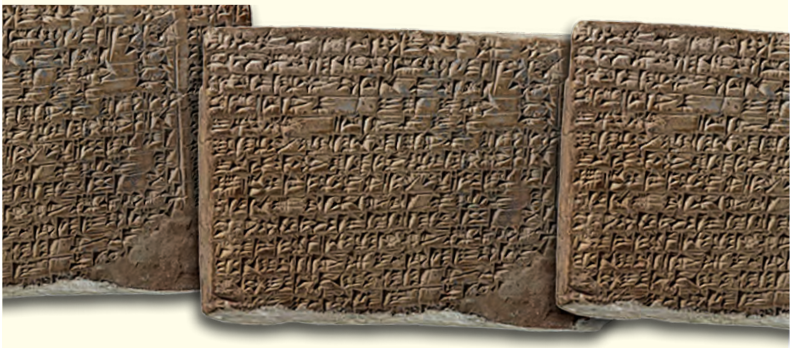
infestation himself with the fungi to relieve his condition.

Ötzi's mushrooms and many other plants were the basis of the poultices, salves, elixirs and liniments that were the ancient forerunners of modern medicine. Handed down from generation to generation, people from all over the world treasured these remedies primarily for one reason: they worked

Ancient practitioners of natural medicine used mint to ease heartburn, indigestion and nausea, black cohosh to relieve menstrual discomfort, and Cayenne for pain relief. The list goes on and on.

But of all the plants and herbs used for health, the cactus-like aloe vera deserves special regard. Many of the folk remedies we know today utilize aloe to treat an almost unbelievable variety of ailments. From use as a first aid ointment to internal complaints, aloe vera is often the primary ingredient in natural remedies.

One of the earliest recorded references to aloe were found on 4,000 year-old Sumerian clay tablets, discovered during excavations at the site the ancient city of Nippur, located in today's modern Iraq. The tablets describe the medicinal use of aloe as a laxative.



CHAPTER 2

The Rise of Aloe and the Resurrection of Herbal Medicine in the United States

> "The healing benefits of aloe vera have been recorded throughout the world for thousands of years. The American medical and pharmaceutical communities most likely have not accepted it because it can't be patented nor a prescription written for it."
>
> Alfred Garbutt, D.C.

As mentioned previously, herbal medicine has been practiced worldwide by humanity for tens of thousands of years. But while the world practiced and continues to practice herbal medicine, here in the United States it's been a different story.

Around 1900, several factors combined to push natural medicine aside in favor of what we call "modern" medicine.

Primarily the development of evidence-based science, the mass industrialization of drug production, and the creation of the modern medical education system all conspired to push herbal medicine into the background.

As science advanced, a tendency to discount folkloric herbal cures in favor of fully researched pharmaceuticals began to set in.

At the dawn of the twentieth century, most scientists saw medicine entering a new era of incredible machines and "miracle" drugs that would replace common folklore with professional science. Scientists argued that synthetic drugs were more effective, targeted and controlled in their effects than plants from the wild. They discounted the "old wives tales' surrounding plants and herbs and maintained their form of "modern"

medicine and drugs were based on science, not magic or myth.

The irony of the situation is that many of our most successful drugs were based on plants; morphine, one of our most potent pain-killers is extracted from the opium plant; digitalis, used in the treatment of heart disease, is derived from the common foxglove.

Secondly, with the dawn of the industrialized age, more and more goods were shifted from individual producers to factories. Likewise drug production moved from the individual druggist at the local apothecary to big, centralized facilities.

As the factory system in the industrialized world expanded exponentially and its efficiencies and scale took hold, it created an environment that heavily favored synthesized products because of assembly-line manufacturing techniques and handling costs.

Synthetics were easier to handle and process than harvested plants. Moreover, it would be decades before the advanced preservation, processing and extraction techniques required in the production of modern herbal medicines would become available. As more and more synthetic drugs came on line and as a by-product of this industrialization, herbal medicine and natural preparations came to be looked on with a certain disdain.

The third element leading to the decline of natural medicine in the United States was the establishment of an interlinked, science-based medical education system that ensured doctors received consistent training in the various scientific disciplines necessary to the practice of modern medicine.

In the United States, the medical training system of 1900 was far different than today. While there were certainly exceptions such as Baltimore's Johns Hopkins University School of Medicine or Boston's Harvard, most medical schools in the U.S. at the time were actually small trade schools that evolved as an outgrowth of the apprenticeship system that had been in existence for centuries.

Typically, these schools were unaffiliated with colleges or universities, and run mainly as businesses by part-time local doctors whose training was often minimal.

Unlike the apprenticeship system which placed one or two "students" with a doctor for a period of many years where they gradually acquired medical skills through observation and hands-on practice, the lecture-based trade school model allowed production of many doctors in a very short time. This appealed to businessmen interested more in profits than in medicine.

In 1908, the American educator Abraham Flexner joined the research staff of the Carnegie Foundation where under the direction of Henry Pritchett, the foundation's president, he was asked to study medical education in the United States and Canada.

Abraham Flexner, author of the 1910 *Flexner Report,* is credited with revolutionizing modern medical training.

The result came two years later in 1910 with the publishing of the *Flexner Report,* a scathing indictment of the state of American medical education.

Prior to publishing the report (also known as Carnegie Foundation Bulletin Number Four), Flexner visited all 155 medical schools in North America and found that few were sufficiently endowed with adequate staff, curriculum, labs or even qualified students. Admission standards were extremely lax, and in some cases the key to a student's admission and successful completion of training was simply paying the tuition bill.

While there were notable exceptions, some schools might consist of only a rented hall with wooden benches where students would listen to a series of lectures presented by local doctors. Rarely would the student directly observe medical procedures or even more rarely still, take part in the actual treatment of patients. Basic diagnostic tools such as stethoscopes and microscopes were often unavailable. Generally unregulated by government or professional organizations, standards and proven curriculum were virtually non-existent.

As these doctor-factories flourished and enriched their owners, the United States experienced a surge in the number of doctors, and the term "quack" became popular.

But with publishing of the *Flexner Report* the stage was set for a revolution in medical education that resulted in reforms leading to closure of two-thirds of the medical schools in the United States.

Criteria was established that mandated minimum academic admission standards. Medical training was standardized and increased to at least six and preferably eight years of formal post-secondary education (including at least two years of study in a hospital setting). Medical schools were merged into the overall university systems both to keep education costs low and maintain professional standards. Training shifted from lecturing to a scientific method and was foundationally based on human physiology, biochemistry and hands-on training.

Over 100 years later, the *Flexner Report* is credited with achieving a complete reshaping of American medicine. And while today's science has far surpassed the medical knowledge of 1900, the general principles of the report are still valid today.

However, Flexner was not known for his support or acceptance of herbal medicine and believed it quackery. Medical schools that emphasized or offered instruction in disciplines such as eclectic medicine, naturopathy and homeopathy were urged to drop those courses or face loss of accreditation.

Within a few decades, these factors combined to create a large-scale decline in the training of practitioners of natural medicine and a shift from reliance on natural plant remedies to more profitable synthetic pharmaceuticals.

But starting in the 1960s with the "flower-power" generation and accelerating into the 70s, 80s, and 90s, herbal and alternative medicine began to experience a resurgence in popular interest and use.

This shift in interest from conventional medicine and

manufactured prescription medications to natural medicine may be in part due to a notorious string of incidents beginning in the 1950s surrounding the safety of some prescription medications.

In 1961, in what was called one of the most tragic drug disasters ever, thalidomide was pulled from the market after it was definitively linked to birth defects. Originally prescribed for treatment of insomnia, coughs, colds and headaches, it was also used to combat morning sickness. Thalidomide is believed responsible for 10,000 birth defects in babies born between 1957 and 1961 when it was removed from sale.

> The side-effects of synthetic medications continue to plague the pharmaceutical industry, causing consumers to turn to more natural solutions for common ailments and symptoms. This includes Baby Boomers, who are searching for safer alternatives to surgeries and prescribed drugs. As a result, people are becoming more educated and informed, and are deepening their understanding of natural alternatives.

In the 1990s the drug combination fenfluramine and phentermine (later known as fen-phen) was hailed as the "miracle" diet drug by manufacturer American Home Products Corp. Then in July 1997 the Mayo Clinic published a paper documenting significant heart-valve damage in over 30% of study participants who had taken one or both drugs together. In the end, AHP was forced to pay $3.75 billion in compensation to users.

In 1999, the FDA approved Merck's painkiller Vioxx despite studies alleging serious cardiovascular side effects. Over the next four and a half years, 100 million prescriptions for Vioxx were written, until finally in 2004 the company was forced to recall the

drug when it was revealed that it doubled the risk of heart attack and stroke. Merck settled lawsuits for an estimated $4.85 billion.

Collectively, cases like this seem to have led to heightened skepticism of manufactured pharmaceuticals and sparked renewed interest in natural solutions to our health problems.

Plant-sourced remedies are often categorized as belonging to "alternative" or "holistic" forms of medicine. But sometimes these terms can be confusing and definitions can overlap.

Here's a quick reference:
Alternative medicine—Literally, this refers to an alternative to "something else." This "something else" is known as conventional, Western, allopathic or orthodox medicine.

Complementary medicine—Treating illness by combining two or more alternative forms of medicine, so one complements the other.

Holistic medicine—Foundational to most alternative medical systems, this approach considers the human body as a complete being, made up of mental, social and spiritual dimensions in addition to the physical.

Natural medicine—Treatment methods based on the laws of nature, which use natural substances to treat patients. Natural medicine includes ayurveda, herbal, homeopathy and naturopathic.

Integrative medicine—The combination of alternative and modern medicine, based on the belief that combining traditional and modern practices is ultimately superior to a single-model approach. The integrative medicinal approach is thought to provide safer, faster and more efficient treatment.

Traditional medicine—A time-tested, proven system of treatment practiced since ancient times and passed down in a culture as part of its tradition.

Natural medicine has been studied and practiced for thousands of years. Long before chemists created the first synthesized drugs, natural medical practitioners were helping people cope with a variety of health issues using natural plants and herbs grown right in the garden. Instead of turning to expensive pills to solve health issues, many Americans are looking once again to Mother Nature for help in maintaining health—maybe that's why more and more windowsills are sporting a medicinal aloe plant.

It's estimated that 66% of the world's population uses herbs and plant products in some form to help treat or cure a variety of conditions. They're not only effective, they provide benefits that are equal or superior to many of the medical remedies of the Western world. Examples of plant-based remedies include:

Penicillin (widely used to fight infections)

Digitalis (commonly known as foxglove, used to control heart problems)

Quinine (from the cinchona or quina shrub, used to treat malaria)

Ephedrine (derived from various plants in the genus Ephedra, for bronchial ailments, including asthma)

CHAPTER 3

Aloe's Use and Cultivation

> "If aloe vera were to be discovered today
> and its remarkable healing properties
> investigated, it would be hailed as
> the wonder drug of this century."
>
> Dr. Ivan E. Danhof, Ph.D., M.D.
> *Professor of Clinical Pharmacology and Physiology*
> *and internationally recognized authority on aloe*

Aloe's healing properties were probably first discovered by accident. One can easily imagine a young mother in prehistoric Africa on her way to draw water for the family, bumping into an aloe plant and scraping her leg on the pointed leaf. Looking down, she notices that the tip of the plant's leaf has broken and it's oozing gel. Curious, she stoops to examine the gel, taking some of it on her finger and sniffing. She notices no smell and, delighted by the gel's coolness on her finger, smears a bit of it onto her scraped leg. Immediately, the sting of the scrape begins to abate…and the rest is history.

As awareness of aloe's medicinal properties grew, we can be sure that tales of the "miracle plant" spread, first locally, then abroad. From its origins in the Fertile Crescent, aloe eventually found its way throughout the warm climates of the world. And once people were aware of its healing properties, it was cultivated wherever possible.

In Biblical times, migrating Hebrew tribes uprooted their aloe plants and replanted them when they got to their destination, where the hardy plants thrived once again. And ancient seafaring Phoenicians in the western part of the Fertile Crescent cultivated aloe for export throughout the Greco-Roman

world. The Romans also learned of the power of aloe from Carthaginian prisoners who used the plant to treat injuries suffered during the Punic wars starting in 264 B.C.

Aloe was also cultivated on the island of Socotra in the Indian Ocean. About twice the size of Maui, Socotra was renowned from as early as the 5th century B.C. for its plantations and the highly efficacious aloe plants they produced. Legend has it that Aristotle urged Alexander the Great to conquer the island to secure its healing aloe crops for his troops.

From there it was exported in powder form eastward to China by Arab merchants, who also stopped in India, Malaysia and Tibet and sold it there as well. By 700 to 800 A.D., aloe was known in Korea.

The name "aloe" originated from the Arab word "alloeh," which means "shiny and bitter." And "vera" is Latin for "true." Ancient Egyptians called aloe vera their "Plant of Immortality."

Aloe's fame spread further yet. In their conquests of 710-797 A.D., Arabs introduced it to Spain. They extracted aloe pulp from the leaves and put it into goatskin bags to bake in the hot sun until it was reduced to a resin. During the Crusades 300 years later, Christian warriors from the West

discovered aloe's virtues from their Muslim adversaries. By the 1200s, dried aloe sap was well-known in Europe.

During the Age of Discovery (early 15th through 17th centuries), aloe became even more widely appreciated, as explorers traveling to and from Europe by ship transported live aloe plants or dried aloe sap from port to port.

Spanish conquistadors found aloe vera already being used in Tenochtitlán and throughout the Aztec empire. Mayan women of the Yucatan used aloe to moisturize their skin. The Jivaro Indians of the Andes called aloe "the doctor from heaven," believing the sacred plant made their warriors invulnerable.

Portuguese and Spanish Jesuits also brought aloe plants to the African and American colonies, where it became known as the "tree of Jesus" and was cultivated for its health benefits.

By the 1700s aloe plants were widely cultivated through-out the warm climates of the Caribbean Islands and Central and South America. Especially in Barbados and Curacao, aloe was developed as a commercial crop. Slaves in Barbados collected the juice from leaves cut carefully from the plant by hand, and then boiled the juice, reducing it to the consistency of molasses. It was then dried and exported, mainly to Europe, where demand was high.

In the United States, Colonel H.W. Johnston started the first modern commercial aloe farm in Florida in 1912. No doubt Col. Johnston realized the importance of taking special care of his plants during their growing season—ensuring they were well-fertilized but not over-watered.

Today, it's no different. Whether in the United States, Central or South America, Africa or Asia, growers are increasingly combining the benefits of modern science with good, old-fashioned care to bring the best product possible to the marketplace. In fact, modern growers go to great lengths while growing, harvesting and processing their plants to ensure that the finished product—be it powder, juice or gel that forms the basis of so many popular products

today—is the purest, most stable product available, with all of the beneficial qualities of the original plant intact.

Growers realize that sometimes the old ways are best, so many today grow their plants organically, with no pesticides, herbicides or germicides to interfere with the chemical properties of the plant.

Landmark Study Proves Organic Farming as More Profitable and Productive

In 2011, the Rodale Institute, founded in 1947 by well-known organic farming advocate Jerome Rodale (left) published the results of a landmark 30-year, side-by-side study proving organic farming methods were not only better for the environment but actually outperformed conventional agribusiness farming methods.

The study showed:

- Over time, yields equal conventional farming.
- Organic outperforms in years of drought.
- Organic farming systems are sustainable and build rather then deplete soil organic matter.
- Organic farming uses 45% less energy and produces significantly less greenhouse gas.
- Organic systems are actually more efficient and profitable than conventional farming.

At harvest time, just like in ancient times, harvesters still use quick, clean cuts at the bottom of the outer leaf, to help ensure that the aloe's precious gel isn't overly exposed to the air—which we now know causes a loss of potency due to oxidation.

Today however, while aloe leaves continue to be harvested by hand, large growers increasingly rely on modern machines for cutting, manufacturing and distribution without sacrificing purity.

Once the leaf has been cut from the aloe plant, like any living thing it immediately starts to decompose. If it's left sitting unprocessed, after 24 to 48 hours its nutritional properties will all but vanish. That's why it's important that once the leaves have been harvested, they are quickly transported to a processing facility. Ideally, the leaves are taken in small lots, about a ton or less at a time, to help ensure speedy processing.

Growers and processors go to great lengths to ensure the crop's freshness. During transportation, special containers are often used to help protect the aloe from the sun's ultraviolet rays. Because UVA and UVB rays can alter some of the qualities of aloe, protected containers ensure it isn't exposed to light. And refrigerated transportation is particularly important in protecting the raw material so none of the aloe plant's 200 biologically active components are lost. Non-refrigerated transportation could diminish product quality, especially in summer months when

Mature harvested aloe leaves being readied for processing.

temperatures can soar upwards of 140°F during transportation.

Once the gel-filled aloe leaves arrive safely at the processing facility, they are carefully inspected and selected for processing into various formulations. Depending in part on the final use and the philosophies of the various growers and manufacturers, processing methods differ.

For example, "filleting" is designed to glean the aloe's clear inner gel, which contains the plant's most active elements.

In hand filleting, the outer rind of the aloe leaf is removed by hand with a sharp knife. Other companies employ automated extraction processes to extract the gel. Either way, it's very important in processing to remove all of the aloin, or aloe latex, contained in the leafy outer portion of the plant, which acts as a laxative.

> ***Aloin***, a component of the aloe leaf, was a common ingredient in over-the-counter (OTC) laxative products in the U.S. until 2003 when the Food and Drug Administration ruled it a Category III ingredient and banned its use. Unprocessed aloe containing aloin is used primarily as a laxative, whereas processed aloe vera juice that does not contain significant amounts of aloin is used as a digestive aid. Due to the FDA ruling, manufacturers now commonly remove aloin during processing.

Still other manufacturers prefer the "whole leaf" processing method whereby the entire leaf is used. In the whole-leaf processing method, leaves are first washed and sanitized, then ground and finally filtered and enhanced to remove unwanted constituents like aloin.

The International Aloe Science Council (IASC),

regulators of the aloe industry, recognizes the description "whole-leaf" to be accurate only if no purification, filtration or other treatment (enzymes, etc.) is conducted on the ingredient beyond the removal of any insoluble material.

"Purified/filtered whole-leaf" describes products or raw material where not only is the entire leaf used as a starting ingredient but also some sort of purification or filtration is utilized (including treatment with enzymes, etc.) to remove or substantially reduce unwanted material and substances from the resulting juice or powder, such as the rind and aloe latex. Other terms such as "charcoal filtered" or "treated" may also be used to describe these products and materials.

Proponents of whole-leaf processing list such advantages as maximum yield of desirable constituents, cost-effectiveness, and increased concentration of total solids, while others insist that the gel be separated at the beginning of the process.

The next step is for the gel to be pasteurized and stabilized. Flash pasteurization is employed to remove active harmful bacteria that live on the plant. A limited amount of heat is applied for a short time as the leaves are being processed, ensuring that the active components, including the polysaccharides, remain viable. Conversely, batch pasteurization is sometimes employed, whereby aloe is basically "cooked" in the pan. Cold-processed products are not subjected to heat at all.

Finally, stabilizers such as ascorbic and citric acids are added, and preservatives such as sodium benzoate may also be used. Potassium sorbate is often added to prevent mold and fungus growth.

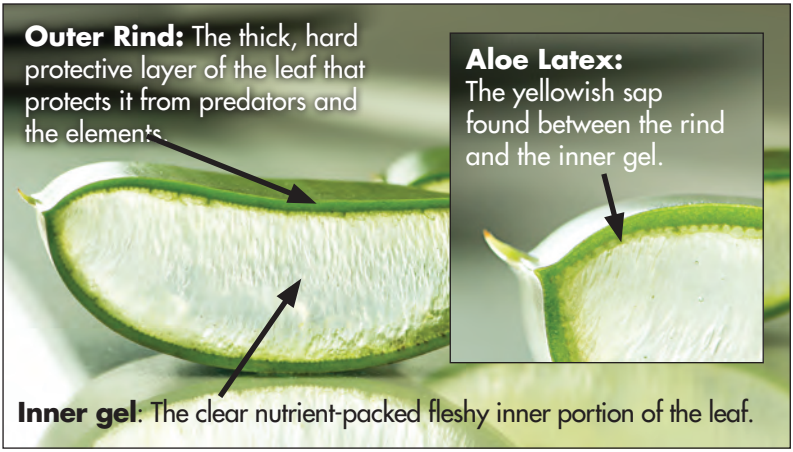
The entire process, from cutting the leaves to the final aloe extract, is ideally completed within 72 hours to ensure maximum effectiveness. The result? Pure, stabilized aloe vera gel, with all of its 200 active components intact, which serves as the foundation for some of the most remarkable products known to man.

Advantages of Whole-Leaf Processing

- Maximizes the yield of desirable constituents.
- More cost-effective.
- Increased total solids concentration.
- Increased polysaccharide concentrations.
- Virtual absence of undesirable anthraquinones (aloin).
- Improved characteristics for cosmetic usage.
- Increased concentration in permeability factors increasing transdermal penetration (skin layers).
- Improved taste/palatability.
- Increased concentration of growth factors responsible for accelerated healing.
- Increased concentration of factors responsible for immune system stimulation.

CHAPTER 4

What Is Aloe?



There are over 400 species of aloe; some only inches tall and others as big as a tree. However, when it comes to medicinal properties, the most treasured species of all is the ancient aloe vera.

Often mistaken for a cactus because of its thick green skin and spiny leaves, Aloe vera is indigenous to Africa and the legendary Fertile Crescent, considered the birthplace of modern civilization.

In fact, the name "aloe" originated from the Arab word "alloeh," which means "shiny and bitter." Ancient Egyptians called aloe vera their "Plant of Immortality," and actively cultivated it.

Aloe vera, also known as aloe barbadensis, is the common name of one particular species of the genus *Aloe*. This botanical genus is classified in the *Liliaceae* (lily) family, because it germinates from an original bulb like lilies do. Other well-known plants in this family include onions, garlic and asparagus.

In assessing the characteristics specific to the aloe plant, an English researcher, Tom Reynolds, coined a new classification, inserting it into the new *Aloaceae* botanical family.

Sometimes classified as a member of the *Xanthorrhoeaceae* subfamily, aloe vera is the most commonly used species

in consumer products. The proper scientific name is Aloe vera (L.) Burm. f. The synonym Aloe barbadensis or Aloe barbadensis (Mill.) or (Miller) is commonly used to refer to aloe vera and is found on many product labels.

The Aloe vera plant is a clump-forming perennial succulent with basal rosettes whose stems are topped by bell-shaped, yellow flowers in summer. The leaves of a mature three to four-year-old plant can extend up to 30 or more inches in length, and have a diameter of about 5 inches at the base and weigh more than three pounds. Approximately one and a half inches thick, each leaf tapers up to a point and thorns project from its sides.

The individual aloe leaf can be divided into four descending layers: the hard, greenish gray, protective outer rind; sap, an unpleasant-smelling yellowish fluid located in the cells next to the outer rind; mucilage gel, also known as the inner leaf area; and finally the inner gel or gel fillet in the center.

Native to warm, arid climates, the aloe vera possesses some unique survival characteristics. It can go months without water. Its tough, thick, thorny outer rind protects it from the elements and predators. If a leaf is accidentally broken and the inner parts of the plant exposed to the environment, the aloe automatically moves to protect itself by exuding a fast-drying latex-based yellowish sap that engulfs the break and forms a protective barrier over the breach.

The complete lifecycle of aloe barbadensis spans up to twelve years. Each plant produces an average of twelve to thirty leaves, which are harvested from the bottom of the plant, oldest first.

Today, due to a number of factors including therapeutic potency, lifetime yield and increased consumer demand, the aloe vera's range has expanded from the ancient Fertile Crescent to virtually every temperate continent worldwide, and aloe is actively cultivated in areas as diverse as Africa, the United States, Southeast Asia, the Caribbean, China, Central and South America, the Middle East and Australia.

And thanks to breakthroughs in modern processing, stabilization and preservation techniques, thousands of products contain aloe and people all over the world have come to appreciate its amazing therapeutic properties.

Aloe Facts

Aloe plants have an incredible ability to grow and shrink and, therefore, survive. Healthy, unstressed aloe plants have long, fat leaves with full end points. When an aloe plant suffers from lack of water, the end points shrivel and the leaves begin to use their interior moisture, causing them to become thinner. In a severe drought, whole leaves may be sacrificed to save the aloe.

- An aloe can survive without water for more than seven years.
- An aloe can take the water it needs for survival and growth from dew collected on its leaves.
- Aloe tolerates a range of temperatures from as high as 140° F to as low as 30° F.

Grow Your Own...It's Easy!

It's easy to grow your own aloe plant indoors or out—all you need is a warm area, well-drained soil, and plenty of light.

First, select a pot. Aloes like a lot of root space, so select your pot accordingly.

Next, add soil. While any type of well-drained soil will work, a basic cactus-type soil is best.

Now take a 3" to 4" pup—that's the small plant that has sprouted at the base—from a mature aloe plant and place it deep enough in the soil so the root ball is covered.

Don't water yet; wait a few days for the plant acclimate itself to its new home and then water.

Finally, place in a sunny spot or beneath a wide-spectrum grow light and water once every few weeks.

When harvesting leaves from your plant, use the outer (oldest) leaves first, since the plant produces new leaves from its center.

CHAPTER 5

What Makes Aloe So Special?

To survive on the earth for millennia as aloe has, any living thing would need to adapt to meet nature's challenges. Maybe this explains why aloe vera has so many healing and life-giving properties, and it helps us understand why so many beneficial components would be needed for the plant to thrive in a harsh environment.

And it's clear that aloe does indeed contain a huge number of nutrients that function in beautiful harmony to benefit the body. In 1994, Dr. Wendell Winters of the University of Texas Health Science Center called aloe "a pharmacy in a plant."

OK, so what exactly is in this fleshy, succulent, desert-dwelling plant that makes it so good for us? For starters, it has more than 200 separate constituents that create a wonderfully diverse mixture of antibiotics, inflammation fighters, burn healers, pain inhibitors, cell growth stimulators, capillary dilators, vasoconstrictor inhibitors as well as moisturizers—all with a remarkable ability to penetrate.

Aloe's vital nutrients include vitamins, minerals, enzymes, essential fatty acids, amino acids, glycoproteins, natural plant sterols, bioflavonoids, growth factors and a

A Look Inside Nature's Pharmacy

- Amino acids—Seven of the eight essential amino acids are found in aloe, plus gutamic acid, glycine and tyrosine.
- Polysaccharides—Including the complex carbohydrates mannose (acemannan), glucose, galactose and xylose.
- Vitamins—Including vitamins C, A, E, B_1, B_2, B_6 and B_{12}, as well as pantothenic and folic acids, biotin, choline and inosital.
- Minerals—Including calcium, magnesium, iron, zinc, manganese and potassium.
- Enzymes—Including the digestive enzymes amylase, lipase, oxidase and lactate dehydrogenase.
- Growth factors—Including gibberellin and auxin.
- Antiseptic & analgesic compounds—Including salicylic acid, lupeol, sulfur, cinnamonic acid and phenol.
- Essential fatty acids, plant sterols (or phytosterols) as well as glycoproteins are also found in aloe.

range of long-chain polysaccharides, or complex sugars.

Many of aloe's healing ingredients are created in the mucilage area. From there, they're dispersed into the inner gel in response to the season of the year, available water, temperature and other factors.

Not only does aloe pack such powerful punch of important

ingredients, but the ingredients themselves all seem to work together to bring out the best in each other. The components of aloe interact like musicians in an orchestra. Taken alone, a musician can play only a part of the score. But when an orchestra performs and dozens of musicians work together, a symphony is born. The polysaccharides in aloe have been compared to the "conductor," helping to orchestrate the various actions and reactions of the surrounding active components in perfect harmony to benefit the body.

Aloe's components can be categorized into three main groups: polysaccharides, anthraquinones and other substances.

Polysaccharides, or complex sugars, are found in the leaf's gel, and have an immune-stimulating action. As mentioned earlier, the polysaccharides in aloe work as conductors, directing the gel's components to function synergistically. Acemannan (a derivative of mannose) is one of the main polysaccharides, and directs and serves as a catalyst for the operations of aloe's other components as they work synergistically to promote a healthy body.

Among its many properties Acemannan boosts production of immune cells and helps direct them to injury or infection; increases circulation; can disrupt replication of cancer cells and viruses; kills fungus, bacteria, viruses, yeast and parasites; attacks free radicals and oxygenates the blood. Acemannan has also been shown in laboratory and clinical testing to be effective in destroying pathogenic organisms while detoxifying and cleansing the metabolic and digestive systems.

Anthraquinones, in the outer part of the rind, have a strong laxative action. Located in the sap of the aloe leaf are 12 anthraquinones, a phenolic compound that has stimulating effects on the bowels and antibiotic properties. Anthraquinones can produce abdominal pain and diarrhea.

The final group is simply other substances, which include nutrients, minerals, vitamins, essential and non-essential amino acids, organic acids, phospholipids, enzymes, lignin and saponin.

CHAPTER 6

How Aloe Benefits Our Bodies Inside and Out

With a skinned knee or elbow, a burned finger or cut, it can seem like it takes forever to heal. Everyone heals at different rates based on their genes as well as their personal level of health. But how healing occurs is the same for us all: The body must produce new cells to replace those that have been injured or destroyed.

Nature's "pharmacy in a plant"—aloe—has been shown to accelerate the growth of new cells, making healing time faster. It's simply good for the body, both inside and out.

It's widely known that, because of its soothing properties, aloe is especially beneficial on cuts and sunburns. Back in the 1930s and 40s, any doubts were laid to rest when Drs. Collins, Wright and Crewe proved the beneficial powers of aloe when treating victims of radiation burn.

They compared patients who did not receive treatments with aloe to those who had aloe applied to their wounds and observed the patients who used aloe experienced shorter healing times, and less evidence of burning and scarring.

Once these findings began appearing in medical journals, other researchers started investigating aloe, wondering if in

To naturally treat a burn, slice an aloe leaf open to expose the inner gel; apply it directly to the affected area. You also can scrape out the gel, mash it with a fork, and apply it the burn as a natural, cooling salve.

fact some of the other old claims about it might also be true.

Aloe's healing capabilities continued to gain interest in the 1950s. In 1959, the FDA concluded from studies conducted by the Atomic Energy Commission at Los Alamos Laboratories' radiation burn center in New Mexico, that aloe gel did have a healing effect on skin tissue. Further studies also demonstrated the effectiveness of the gel.

Modern clinical studies today confirm aloe is indeed one of the best herbs for soothing skin and healing burns, rashes, frostbite and even severe wounds. It also is used to treat dandruff, acne, ringworm, gum disease, eczema, poison ivy and poison oak.

Aloe has been shown to have antibacterial, antiviral, anti-fungal, anti-inflammatory, antipyretic (fever/pain), anti-parasitic, oxygenating and antioxidant properties, and appears to be effective against a broad spectrum of germs, inhibiting the reproduction of herpes and measles viruses in vitro.

It also controls itching by inhibiting histamine reactions produced by insect bites, stings, poison oak and poison ivy.

In addition, it's used to soften and break down calluses and blisters and reduce scarring by inhibiting the formation of tissue-injuring compounds that gather at the site of an injury to the skin. One of the plant's anthraquinones, chrysophanic acid, is effective in healing abrasions.

Aloe vera is used to treat various gastrointestinal disorders, including diverticulitis; gastric, peptic and duodenal ulcers as well as ulcerative colitis. In fact, outside the United States, aloe is used primarily as a health beverage.

The Internal Benefits of Polysaccharides

The benefits that aloe provides the body are remarkable indeed. One of the key reasons why is because of the important collection of diverse ingredients found in aloe, such as its large polysaccharides, or complex carbohydrates. These polysaccharides survive the digestive process with

all their nutrients intact and are then absorbed into the bloodstream and delivered into the cells, tissues and organs.

From there, polysaccharides work quietly to:

- **Increase absorption and penetration.** One of the best things about aloe is that not only is it so absorbable, but it also helps other nutrients be absorbed by the body's cells too. This unique ability acts as a sort of "biological delivery truck," drawing the nutrients dramatically through the cells and tissues of the body. This penetrative/absorptive property helps increase the effectiveness of aloe's own nutrients as well as those provided by food, supplements, medicines and vaccines we ingest or inject.
- **Strengthen cell membranes.** Strong membranes mean stronger cells, which are better able to fight infection.
- **Improve cellular metabolism.** Fortified by aloe, your cells function better and have more energy. And when your cells are energized, you are energized!
- **Promote tissue growth and regeneration.** Aloe's long polysaccharide chains stimulate the production of fibroblasts and proteoglycans for new tissue growth throughout the body.
- **Cleanse and detox.** Aloe's polysaccharide molecules help break down and remove excess waste, toxins, mucus and heavy metals in cells, tissues and organs.

Because they enhance function at the cellular level, the polysaccharides in aloe vera seem to benefit the entire body and all of its systems, including not just the skin, but also the body's metabolism and hormones as well as the digestive, respiratory, circulatory and immune systems.

For example, scientific research on one of aloe's key polysaccharides, acemannan, shows that it directly enhances and modulates the immune system, improving and stimulating the ability of white blood cells—including macrophages, killer T-cells, monocytes, such as interferon and TNF—to protect the body from pathogens, bacteria and viruses.

In addition, acemannan is believed to help keep cancer cells from attaching to other cells in the body.

Aloe juice can be used internally as needed to cleanse or detox, help with indigestion or nausea, provide energy, ease aches and pains, or simply as a "boost" to help you fight off something that may be coming on.

A study by Dr. Jeffrey Bland published in 1985 demonstrated that taking aloe vera internally improved the participants' protein digestion/absorption, improved colonic activity, balanced acid levels and lowered bowel putrefaction—in just a week. By improving digestion and elimination, aloe helps reduce chronic inflammation, potentially improving back, knee, shoulder and other joint pain.

When you first start consuming aloe juice, you may experience a cleansing effect. This happens because the aloe stimulates your body's natural metabolic processes, which produces a larger-than-normal amount of waste material that needs to be eliminated. It's a good idea to also drink plenty of water to help your body flush out toxins.

Based on perceived need, aloe juice can be consumed in small amounts (1 to 2 ounces, 1–2 times a day) up to larger amounts and more frequently (3 to 4 ounces, 3–4 times a day). It can be consumed alone or mixed with fresh fruit juice or other cold beverages.

For maximum absorption into your body's cells, take aloe on an empty stomach between meals. It's best to consume it in small amounts throughout the day, rather than all at once, so that it's more continually available to your body's systems.

When taking aloe, start with a smaller amount and work your way up. Once you achieve the desired benefits, you can continue to consume that amount daily. Check to ensure the juice you purchase is filtered to remove aloin. Aloin is a very powerful purgative and laxative and should only be used under a doctor's care. Aloin's removal from the juice does not affect its powerful natural healing qualities.

Make fresh aloe juice at home with this handy recipe.

Aloe vera may be prepared as 100% juice and stabilized with vitamin C.

Pick large leaves, cut the skin off, rinse the yellow sap off with water and place the clear gel in a blender.

Combine 3 cups of gel with 1 tsp. of vitamin C powder. Blend at low speed.

Place in a covered container in the refrigerator.

Consume 1 to 2 oz. twice daily, mixed with water or added to fruit juice, which helps to disguise the gooey texture and makes it easier to swallow.

The pure juice, taken regularly, is recommended as an effective way to reap the medicinal benefits of aloe.

CHAPTER 7

Aloe's Effects on Inflammation, Arthritis and Wound Healing

One of the effects aloe is most well-known for is its anti-inflammatory properties. It's important to note that inflammation serves a good purpose—bringing needed blood and immune cells to the site of an infection or injury. This not only helps diminish the problem, it also promotes healing. But when inflammation is chronic, it can lead to serious complications.

While we might typically think only of the skin or joints when it comes to parts of the body that can become inflamed, other areas can also be affected. For example, the heart, the immune and digestive systems, and even the brain can all be chronically inflamed, which can lead to such health disorders as arthritis, stroke, asthma, premature aging and cognitive dysfunction.

Natural aloe vera contains a number of components that help the body fight off inflammation.

The gel possesses plant sterols, powerful compounds that can help reduce systemic inflammation. Like steroid drugs, plant sterols have been shown to have an anti-inflammatory effect. But unlike steroids, plant sterols do not inhibit healing. In fact, aloe vera actually promotes the healing of tissue.

> Inflammation and pain often go hand in hand, and aloe has been shown to help relieve pain as well as inflammation. But how does it do this? Prostaglandins are chemicals the body produces that stimulate nerve cells to send pain messages to the brain. They tell your brain that you're hurt. It's believed that aloe inhibits a vasoconstrictor called TxA2, while also regulating prostaglandin production.

Inflammation plays a part in such diverse diseases as cancer, diabetes, Alzheimer's, arthritis, osteoporosis, cardiovascular disease and auto-immune diseases. It also plays a role in such daily discomforts of life as chronic pain, general cognitive decline, memory loss, depression and general muscle fatigue.

Five Signs of Inflammation

- Redness
- Heat
- Swelling
- Pain
- Decreased function of affected area

The plant also contains salicylic acid, an aspirin-like compound that disrupts the production of prostaglandin hormones, which cause inflammation. But aloe vera doesn't hurt your stomach or digestion like aspirin can—it promotes it. It also contains a pain-fighting enzyme called bradykinase, which breaks down the pain-causing molecule bradykinin. Bradykinin is a chemical produced at the site of an injury on the body, which binds to receptors and causes pain.

The gel has a COX-2 inhibiting effect. COX-2, the enzyme that produces prostaglandins, causes inflammation and pain. These symptoms can be greatly reduced when COX-2 is inhibited. However, most COX-2 inhibitor medications—like Vioxx—can have serious adverse effects, particularly on blood pressure and the cardiovascular system. Unlike synthetic medications that inhibit COX-2, aloe vera can naturally block the action of COX-2, but with few or no side effects.

On a cellular level, aloe gel also facilitates protein absorption. Impaired digestion and poor absorption of proteins can create food remnants, or "foreign invaders" the body views as a threat. To protect itself, the body uses inflammation, an auto-immune response that can ultimately

result in such conditions as irritable bowel syndrome (IBS), Crohn's disease, colitis and rheumatoid arthritis.

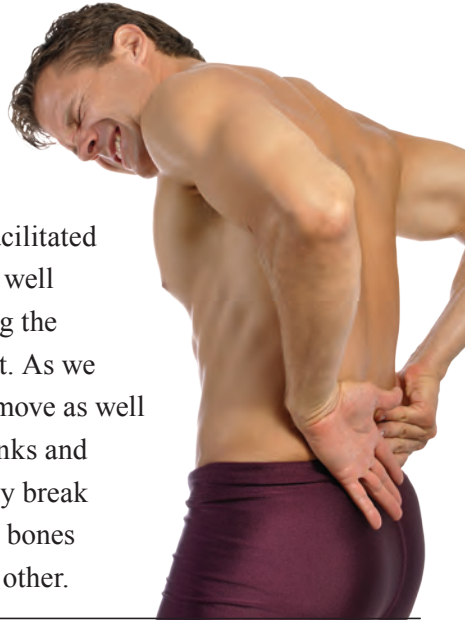
The polysaccharides in aloe help the immune system remove toxins, which provides anti-inflammatory benefits.

Finally, aloe is a powerful natural antioxidant that obliterates inflammation-causing free radicals. Free radicals cause cellular damage that can lead to serious health issues. The gel naturally helps neutralize and clear the body of free radicals that can damage joints and cause swelling.

Aloe and Arthritis

Arthritis affects an estimated 50 million people in the U.S. alone. Common symptoms include pain, aching, stiffness and swelling around joints. The word arthritis actually means joint inflammation. But today the term encompasses more than 100 different rheumatic diseases and conditions. Fibromyalgia, gout, rheumatoid arthritis, lupus and osteoarthritis are all forms of arthritis.

Osteoarthritis, the most common form, is caused by wear and tear of the large, weight-bearing joints, such as the ankles, knees and hips. It progresses more quickly in the particularly mobile joints of the lumbar and cervical spine as well as the shoulder girdle. The lubrication and ease of movement of these joints are facilitated by the joint's synovial fluid, as well as healthy cartilage surrounding the bones that terminate at the joint. As we age, the over-used joints don't move as well because the synovial fluid shrinks and the cartilage begins to gradually break down, which eventually causes bones to grind painfully against each other.



Rheumatoid arthritis can affect someone at any age and is caused by antibodies produced by the immune system. For reasons we don't yet completely understand, these antibodies attack the joint's synovial lining and begin to break down the synovial membrane and cartilage. The result? Inflammation, with its characteristic pain, heat, swelling and redness. Immunological arthritis can also accompany other systemic illnesses, such as systemic lupus erythematosus (SLE) and scleroderma.

As previously noted, aloe vera contains anti-inflammatory agents such as bradykininase, salicylates, phytosteroids and vitamins A, B, C and E that act as powerful antioxidants. They help reduce inflammation and eliminate the high-speed super oxides that accompany swelling.

Thanks to aloe vera's high mineral and glucosamine content, joints also heal more quickly. The minerals help facilitate beneficial enzyme reactions in the joints while glucosamine helps cartilage form.

The Proof Is In!

The anti-inflammatory activity of aloe vera gel has been proven in a number of in vitro (laboratory) and in vivo (animal) studies. In one study, aloe vera gel significantly reduced acute inflammation in rats, although no effect on chronic inflammation was observed. Aloe vera gel appears to exert its anti-inflammatory activity through bradykinase activity and thromboxane B2 and prostaglandin F2 inhibition. In addition, three plant sterols in aloe vera gel reduced inflammation by up to 37% in croton oil-induced edema in mice. Lupeol, one of the sterol compounds found in aloe vera, was the most active and reduced inflammation in a dose-dependent manner. The data suggests that specific plant sterols may also contribute to the anti-inflammatory activity of aloe vera gel.

Burns, Cuts, Scrapes and Surgical Incisions

Using aloe gel on irritations, rashes, sores, wounds and skin problems can result in remarkable benefits. Topically applied aloe vera gel has been shown to reduce the healing time of wounds, including surgical incisions, by as much as 35%. According to John P. Heggers, Ph.D., "Aloe vera has enormous therapeutic potential."

Aloe has several key ingredients that work synergistically to promote rapid healing of damaged tissues. Proteolytic enzymes "digest" waste tissue, including pus, and speed the regeneration of tissue. As noted earlier, the bradykinase enzyme blocks inflammatory reactions (which result when a trauma or injury damages cells) and stimulates immune system defenses. Barbaloin and aloetic acid perform antibiotic and antibacterial functions. Isobarbaloin, a cinnamic acid ester, and salicylic acid help relieve pain. Acemannan speeds new skin growth by stimulating macrophages and increasing fibroblast and collagen production. In addition, acemannan supports the formation of scar tissue. Along with the amino acids, vitamins, and minerals, acemannan helps bring about a quicker and more organized healing of the tissue, without long-term scarring.

CHAPTER 8

Aloe's Use for a Variety of Health Conditions

Several health conditions have been scientifically shown to benefit when treated with aloe vera. Below is synopsis of just a few of the studies conducted on the therapeutic benefits of aloe both externally and internally.

Seborrhea

Seborrhea is a common skin condition that manifests in scaly, oily, red eruptions on or near the eyebrows, eyelids, nose, ears, upper lip, chest, groin or chin. A double-blind, placebo-controlled study of 44 individuals found that 4 to 6 weeks of treatment with aloe ointment could significantly reduce symptoms of seborrhea.

Psoriasis

Psoriasis is a chronic skin condition thought to result when the immune system mistakenly activates a reaction in the skin's cells, causing lesions and itchy patches to form. A double-blind study of 60 adults with mild to moderate symptoms showed that aloe cream may be helpful for psoriasis. Participants were treated with either topical aloe extract (0.5%) or a placebo cream, applied 3 times daily for 4 weeks. Treatment with aloe produced significantly better results than placebo, and these results lasted almost a year after treatment ended.

Another study showed marked improvement in 72.5% of skin patches treated with aloe.

Lichen Planus

Characterized by flat, itchy, scaly patches, lichen planus is a chronic skin condition that can occur in body parts such as the mouth, legs, trunk, wrists and genitals.

In a double-blind, placebo-controlled study of 54 people with oral lichen planus, aloe vera gel was significantly more effective than placebo in alleviating symptoms. In another study involving 34 women with lichen planus of the vulva (external genitalia), aloe vera led to significantly more improvement than placebo.

Genital Herpes Lesions

A 2-week, double-blind, placebo-controlled trial enrolled 60 men with active genital herpes. Participants applied aloe cream (0.5% aloe) or placebo cream 3 times daily for 5 days. Use of aloe cream reduced the time necessary for lesions to heal (4.9 days versus 12 days), and also increased the percentage of individuals whose lesions were fully healed by the end of 2 weeks (66.7% versus 6.7%).

A previous double-blind, placebo-controlled study by the same author, enrolling 120 men with genital herpes, found that cream made from aloe was more effective than pure aloe gel or placebo.

Diabetes

Diabetes is a collection of diseases marked by high levels of blood glucose. These levels can be caused by problems with insulin production or its effects, or both. The Centers for Disease Control estimates that over 23 million Americans suffer from diabetes — primarily Type 1, Type 2 and gestational diabetes—resulting in $174 billion in direct medical costs and $58 billion incurred due to disability, work loss and premature mortality. Furthermore, it now affects about 246 million people globally, and that number is increasing. Statistics show that every ten seconds someone dies as a result of diabetes and two new cases are diagnosed.

In 1986, doctors in Saudi Arabia at King Saud

University's Department of Medicine stated that dried aloe sap is used to lower blood glucose in diabetic patients in the Arabian peninsula. Their paper concluded that aloes contain a hypoglycemic agent that lowers blood glucose.

In addition, evidence from two human trials suggest aloe gel can help control blood sugar for Type 2 diabetics. In one study, a single-blind, placebo-controlled trial evaluated aloe's potential benefits in individuals with diabetes. The results showed significantly greater improvements in blood sugar levels among those given aloe over the two-week treatment period. Another single-blind, placebo-controlled trial evaluated the benefits of aloe in individuals failing to respond to the oral diabetes drug glibenclamide. Of 36 individuals who completed the study, those taking glibenclamide and aloe showed definite improvements in blood sugar levels over 42 days as compared to those taking glibenclamide and placebo.

Some herbals, like aloe, have not only been found to assist in controlling blood sugar, they have also been shown to support organs—such as the kidneys, liver, heart and eyes—that could be affected by prolonged diabetes.

Aloe has slimy, slippery constituents with demulcent (soothing) effects, as well as vulnerary (wound-healing) effects. A 1973 study published in the *International Journal of Dermatology* highlighted the effects of aloe vera gel applied on leg ulcers. The three patients studied each had a serious, raw leg sore that had persisted between 5 and 15 years. These types of ulcers are common in those with diabetes, as well as those with blood circulation problems and those who are bedridden. After the aloe gel was repeatedly applied to the ulcers, they healed completely in two patients; the third patient's ulcer showed significant improvement.

Ulcerative Colitis

Of all the benefits of aloe vera's ingredients, and they way they work together, acemannan's ability to coat and permeate gastrointestinal membranes is one of the most important. The long-chain polysaccharide increases these membranes' fluidity and permeability so that nutrients are absorbed more quickly and toxins are more easily expelled, which is crucial to maintaining optimal health.

In a small double-blind, placebo-controlled study of 44 people with active ulcerative colitis, use of oral aloe gel at a dose of 100 ml twice daily for 4 weeks appeared to improve both subjective symptoms and objective measurements of disease severity. About half of the people given aloe showed response to treatment; about 30% experienced full remission. Benefits occurred only rarely in the placebo group.

Acquired Immune Deficiency Syndrome (AIDS)

A number of studies in the last few decades show the promise of aloe components in treating HIV and AIDS.

In 1987, research by Dr. H. R. McDaniel showed that aloe vera stopped the progress of AIDS. He also reported a corresponding drop in antibodies to HIV and the number of free virus in blood samples. McDaniel further concluded that the aloe would control or kill many other retro viruses, including the viruses that cause the common cold, measles, mumps, chicken pox, flu and other viral diseases.

In April 1990, a paper was presented by the following PhDs and DVM in Brussels, Belgium: Jasbir B. Kahlon, Maurice C. Kemp, Ni Yawei, Robert H. Carpenter, William M. Shannon, and Bill H. McAnalley. They concluded that aloe, or a substance extracted from it, is a very effective treatment against HIV-1 and other strains of the virus that causes AIDS. Research confirms that daily ingestion (20 oz. or more) can act as an immunization against the HIV infection. In HIV-positive or AIDS patients, aloe: (1) keeps infected T-4 cells from

reproducing the virus, (2) either kills free virus in the blood or it stimulates the individual's immune system to kill the virus or both, (3) it stops the disease AIDS from developing in HIV-positive patients and can completely reverse the disease in those with AIDS, and (4) some patients become Syro-negative. (The virus or antibody to the virus can no longer be found in the blood.)

In 1994 the U.S. Food and Drug Administration approved aloe for human testing against the human immune-deficiency virus (HIV), the virus that causes AIDS.

Heart Disease

In 1984 O.P. Agarwal, M.D., F.I.C.A, Uttar Pradesh, India, recorded that aloe had virtually eliminated heart disease, stress related disorders and diabetes in more than 4700 of the 5000 patients who were followed for five years. All patients were instructed to mix approximately 4 oz. of fresh aloe vera plant and 3/4 oz. of the husk of isabgol (psyllium) with wheat flour to make a loaf of bread. Treatment consisted of eating one loaf of aloe bread per day.

Dentistry

As the benefits of aloe vera have become more widely known and accepted, aloe is being employed by dentists in their practices:

- Applications directly to the sites of periodontal surgery.
- Applications to the gum tissues when they have been traumatized or scratched by toothbrush-dentifrice abrasion, sharp foods, dental floss and toothpick injuries.
- Chemical burns are relieved quickly from accidents with topically applied aloe.
- Extraction sites respond more comfortably and dry sockets do not develop when aloe vera is applied.
- Acute mouth lesions are improved by direct application on herpetic viral lesions [cold sores], aphthous ulcers, canker sores, and cracks occurring at the corners of the lips. Gum abscesses are soothed by the applications of aloe vera as well.
- Denture patients with sore ridges and ill-fitting dentures and partials can benefit from aloe by reducing inflammation and irritation caused by fungi and bacteria.
- Aloe vera can also be used around dental implants to control inflammation from bacteria contamination.

Oral disorders such as candidiasis (thrush) and desquamative gingivitis, as well as oral conditions resulting from vesiculobullous diseases, acute monocytic leukemia, hematological disorders and nutritional problems, have all been reported to respond to aloe vera.

Dry mouth caused by diabetes mellitus, Sjorgen's syndrome, menopause and medications has also been helped by aloe.

One study showed a toothpaste containing aloe vera (but no fluoride) compared more favorably than two popular fluoride-containing toothpastes in bactericidal effectiveness.

Aloe and Animals

Some veterinarians are now using aloe plant extracts to treat cancer and feline leukemia in their patients. And research is backing them up:

In 1975, in a small study of the effects of aloe on cats, dogs and horses, Robert B. Morthway, D.V.M., observed aloe vera gel relieved pain and itching and provided excellent to good effects on the following conditions: ringworm, allergy, abscess, otitis externa, hot spots, fungal infections, lacerations, inflamed cyst and staphyloma.

In 1991, Dr. Ian R. Tizard of Texas A&M and others reported in the *Journal of Molecular Biotherapy* that aloe mannose was highly effective against feline leukemia and soft tissue cancer in cats and dogs.

Dr. James Duke of the United States Department of Agriculture approved the use of aloe mannose as a treatment of soft tissue cancer in animals and feline leukemia in 1992.

Even horses may benefit; Peter Green reported considerable success in treating horses with post viral lethargy syndrome (PVLS) with aloe vera.

CHAPTER 9

The Key to Naturally Soft, Beautiful Skin—Aloe

With all that aloe does to help heal and restore the body—and given its extensive history as a natural moisturizer and beauty treatment—it's no wonder that it's also one of the most popular ingredients in cosmetics, cosmeceuticals and skin care products on the market today. Skin care manufacturers interested in providing the best products make it a point to include aloe as an ingredient.

Since the times of the ancient Greeks and Egyptians, aloe gel has been used in cosmetics. In fact, Cleopatra and Queen Nefertiti both used aloe vera in their beauty regimens, realizing that it kept them looking young. For this reason, the plant is also known as "the fountain of youth."

Although the cosmetics industry's use of plant-derived ingredients is as old as cosmetics themselves, in the 1990s interest exploded, as new benefits were discovered, greater standardization and control of raw materials became

possible, and formulation techniques were improved.

Today aloe-based cosmetics and skin care items abound. Look on any cosmetic counter anywhere in the world and you'll see products containing aloe, including body lotions, creams and gels; facial cleansers; bubble baths; sun creams and lotions; shampoos; moisturizers; lipsticks; facial towelettes—and the list goes on. It's even projected that, thanks to its skin-softening benefits, aloe may soon be found in such products as dishwashing liquids and fabric softeners.

Why do so many products start with aloe vera as their basis? While hundreds of people have reported that, due to its enzyme activity, aloe reduces and eliminates scars, age lines, liver spots, marks and blotches, it's probably aloe's ability to accelerate new cell growth and lead to younger-looking skin that makes it such a popular ingredient. Queen Nefertiti and Cleopatra were right! Aloe's assortment of age-defying and skin-healthy botanical components is amazing.

Just Some of the Benefits of Aloe for Skin

- Aloe vera penetrates deep into the dermis, naturally. The ability of aloe to deeply penetrate helps transport other beneficial ingredients into the skin's layers.
- Aloe vera helps renew the skin by helping to repair and maintain it.
- Aloe vera gel preserves, nourishes and moisturizes cells, resulting in very soft skin.
- It balances and acts as a natural humectant to provide a radiant glow.
- It protects the skin by supporting the cells' immune function.
- As an anti-Inflammatory, it helps reduce skin blemishes, soothing the skin and eliminating redness.
- Aloe improves the condition of dry or damaged skin by reducing flakiness and restoring suppleness.

Though similar promises have been made about other natural ingredients, none has the background of millennia of use, testimonial evidence and the scientific proof the ancient aloe vera can boast.

For example, glycerin (a common ingredient found in many cosmetics), like aloe, is used in cosmetics to help hold moisture against the skin and prevent dryness. But the amount contained in a product shouldn't be more than 20% and despite its many benefits, glycerin isn't appropriate for everyone.

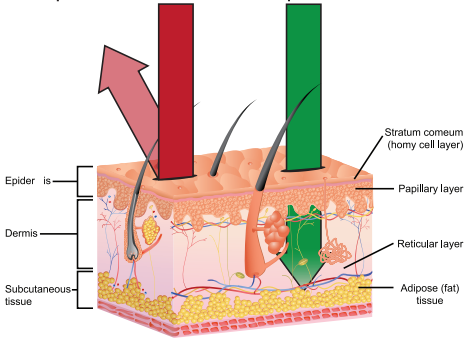
According to the American Academy of Dermatology, people with sensitive skin, atopic dermatitis or eczema shouldn't use glycerin—especially when combined with rose water—because it can boost dryness. It can also cause allergic reactions.

Some ingredients used in the cosmetics industry, especially man-made chemical ingredients, have been shown to be toxic. It's estimated that women use an average of 12 of these types of products daily, and men 6. The combined effect of these synthetic ingredients on our world, as well as our bodies, may be increased toxicity.

Aloe's Benefits Go Deep

The skin has three layers—the epidermis on the surface, then the dermis and finally the subcutaneous tissue. Aloe vera penetrates deep into all three layers, something that very few ingredients can do on their own.

The "Father of Aloe," Dr. Ivan E. Danhof, professor of clinical pharmacology and physiology,



A cross section of human skin

researcher and author of a number of books about aloe, conducted research revealing that aloe vera gel penetrates human skin more than three times faster than water. It's partially due to this super-penetrating ability that aloe is added to skin cleansers, moisturizers and aftershave creams.

Dr. Danhof's research also uncovered aloe's unique ability to boost production of fibroblast cells—up to eight times faster than normal cell production. Found in the dermis of the skin, fibroblasts help create collagen, the skin's "support protein" responsible for keeping it supple, firm and youthful-looking.

Danhof discovered that the presence of aloe vera not only improved fibroblast cell structure, but it also accelerated collagen production. As a bonus, aloe's a super-softener and emulsifier too, so it not only penetrates but also moisturizes the skin's under layers.

Aloe, unlike water, is absorbed deep into the skin's layers. This is partially due to the presence of lignin, a substance similar to cellulose. Aloe's amazing ability to penetrate allows it to function as an excellent "carrier" for its own and other moisturizing and inflammation-reducing components used in skincare products.

In the marketplace today, skin care products known as cosmeceuticals contain natural active ingredients that have been shown to interact physiologically on the skin and to be beneficial in treating sun-damaged and/or aging skin.

Examples of these ingredients include:

- Alpha-hydroxy and beta-hydroxy acids (AHAs & BHAs) such as citric acid, ascorbic acid (vitamin C), salicylic acid, lactic acid and glycolic acid, which have been proven to increase skin exfoliation and cell turnover, decrease uneven pigmentation, and help the skin retain moisture.
- Retinol (a vitamin A derivative), which helps reverse the effects of ultraviolet radiation (sun-damage) and stimulates collagen production.

- Antioxidants, such as vitamins C and E, which help protect the skin from ultraviolet radiation by decreasing the number of free radicals that damage skin cells. Vitamin C is also believed to repair collagen and stimulate its production.

Not only does aloe help these ingredients to do their best work by transporting them deep down into the skin's layers, but aloe-based skin care products also deep-clean as they tone and moisturize. This four-fold action helps to preserve the skin and minimize the signs of aging.

Aloe vera is Mother Nature's most powerful skin moisturizer. It naturally collects and retains moisture, and penetrates deeply to give skin a fresh, natural and youthful glow. In fact, a study evaluating the effects of cosmetic formulations containing various concentrations of aloe vera extract on skin hydration using skin bioengineering techniques proved that aloe extract is a natural, effective ingredient for improving skin hydration.

Because it's good for resolving hair problems, aloe is also an excellent base ingredient in shampoo. Partially due to its weak acidity, aloe can help stop hair loss. Aloe has an average pH value of 6, which is close to the pH of skin (around 5.5). This helps aloe's nutrients to penetrate the scalp easily, thus revitalizing the hair follicle, strengthening it and promoting regrowth of the hair.

When taken as a juice, aloe helps promote overall skin health and beauty. Its antioxidant properties help protect the body at the cellular level, which helps to promote younger-looking, more beautiful skin, while its other properties work to support pain relief and systemic inflammation.

CHAPTER 10

Be an Educated Consumer: What to Look for in Aloe Products

Whether it's a dietary supplement, skin care or cosmeceutical product, knowing which aloe vera-based product is best isn't always simple. According to the International Aloe Science Council (IASC), "The best aloe vera product is the one that has been proven to contain aloe vera and that you enjoy. Whether it is made from organically grown aloe vera, contains 90% aloe vera juice or 85% aloe vera juice, is made of inner leaf or purified whole leaf juice, is flavored or not, are all choices you need to make based on your personal preferences and experiences."

Content and Purity

When it comes to how much aloe it takes to make a product effective, there are no official standards, and the definition of what is considered "pure aloe" is up to the marketer or manufacturer.

But educated consumers can steer clear of dubious products by following a few simple precautions. First, read the ingredients. Over-the-counter medications, juices and nutritional supplements are required to list ingredients clearly on the label.

Cosmetic-type products are not required to list ingredients,

but most reputable manufacturers want consumers to know what they are using and list ingredients in descending order by content; some even go so far as to list the percentage of aloe gel by volume right on the front of the product.

Savvy consumers know if aloe appears at or near the bottom of the ingredient list, there may only be enough aloe in a product to allow the manufacturer to claim aloe as an ingredient.

A word about health claims for products taken internally: In the U.S., while it may seem that every cosmetic on the market contains aloe, most aloe vera products are actually manufactured and sold as food or dietary supplements. As required by U.S. Food & Drug Administration (FDA) regulations and under the Dietary Supplement Health & Education Act of 1994, such products are not allowed under federal law to display claims that products can be used to cure, treat or mitigate disease unless they have been previously approved by FDA. For example, "good for ulcerative colitis" or "ends irritable bowel," are clearly prohibited claims.

If a manufacturer wants to list a curative claim, the FDA requires extensive clinical studies and trials before it will even review the product. Essentially, if the FDA grants approval, the product or ingredient is then classed as a new "drug" and falls into a completely different category of regulation.

This system serves to protect consumers from products or medications that fail to work or possess dangerous side-effects. However, this process can take decades and millions of dollars to complete and sometimes results in preventing consumers from being aware of the benefits of certain ingredients or products.

Products Used Topically

When possible, look for topical aloe products that closely match the pH level of human skin. Also, make sure there is enough aloe in the product to be beneficial. According to the IASC, most major bands of cosmetic and toiletries contain less than 2% aloe. Science shows that at least 20% aloe by volume is necessary for a beauty product to be beneficial.

Additives and Preservatives

Products, whether for internal or external use, often contain many additives and may have been chemically altered. High amounts of such additives can be unhealthy. Some additives have even been linked to specific illnesses.

Try to avoid products that have been exposed to strong solvents during processing, and if preservatives are used, look for products with preservatives from natural sources. If you have any doubt about a particular ingredient, contact the manufacturer and ask for an explanation. Most are happy to provide the information. If not, perhaps you should avoid using that product.

Other Important Considerations

Organically grown aloe vera is generally considered the best. What does this mean exactly? According to the Environmental Protection Agency, "organically grown" means a crop is produced without using synthetic fertilizers or pesticides. Natural pesticides such as neem oil or natural fertilizers are acceptable in producing organically grown crops.

Increasingly, consumers are choosing to purchase organically grown and processed foods as a way to reduce their exposure to synthetic pesticides and fertilizers.

In addition to buying products that use only organically grown aloe, consumers should also ensure that the aloe is processed quickly after harvesting so it isn't exposed to the air for too long and allowed to degrade in quality.

Look for products that use the whole leaf of the aloe plant. Because nutrients are manufactured and stored in the plant's outer rind and leaf, whole-leaf products provide more beneficial ingredients than products formulated from the gel alone.

CHAPTER 11

Conclusion

The purpose of this book is to help you, the reader, gain a better understanding of aloe, one of nature's most powerful natural healers. While to many of us, using herbs, plants and other naturally sourced ingredients to support health may seem like a fad, it's not. More and more of us are opting for natural alternatives to expensive pharmaceuticals. In the United States, natural product sales were up 7% in 2011 and accounted for over $36 billion in sales, and the use of herbal (plant) remedies is rapidly becoming a major factor in American health care.

Unlike laboratory-created pharmaceuticals, many feel that herbs and plants are more in harmony with the body's biochemistry and have less undesirable side-effects. As a bonus, herbs and plants contain vitamins, minerals and nutrients in a form the body can recognize and use more easily.

There is simply not enough space in this short book to list all the conditions known to be helped by aloe. So below are just a few.

Aloe can kill germs and help relieve: pain and itch, skin dryness and irritation, wrinkles, age spots, acne, psoriasis, eczema, chapped lips, gum disease, canker sores, herpes sores, diaper rash, dandruff, cradle cap, teething and gum soreness, stings, bites, ringworm, rashes, chicken pox, acne, including hormonal acne, burns, razor burn, sunburn, sun damaged skin, eczema, poison oak, poison ivy, varicose veins, blisters, skin ulcers, KS, melanoma, warts, genital warts, hemorrhoids, fungus, frostbite, arthritis, muscle soreness, bruises and sports injuries.

As humans in the modern world, our bodies face ever-increasing stress thanks to environmental chemicals, food that isn't as nourishing as it used to be, and infectious agents that attack the immune system. Many people now believe that in order to ameliorate the damage caused by these stresses, as

well as to keep our bodies functioning optimally, an all-out plan embracing integrative medicine is best—one that incorporates both the old and the new in all levels of health, diet and lifestyle and treats not a single disease, but the entire person.

If you do decide to use aloe, remember, aloe's effectiveness in your body will be impacted by your individual body chemistry and level of health. Everyone is different, and healing time can vary. Some feel better immediately after using aloe, while others may notice aloe's effects more gradually.

However, if you are pregnant, nursing an infant, or currently under a doctor's care, it's wise to consult with your healthcare practitioner before using aloe or any other natural product.

Today, aloe is used around the world in a variety of ways, including cosmetics, dietary supplements and healthy drinks. Numerous scientific studies about the aloe vera plant support that it can be used to help almost any ailment, external or internal, in relation to nearly every part of the body.

As it continues to gain in popularity and be used increasingly as a key ingredient in cosmetics, cosmeceuticals and nutritional products, people everywhere, of all ages, are discovering that aloe promotes a vibrant, healthy glow and helps them have more energy as well as a youthful zest for life.

Truly, aloe vera is one of Mother Nature's miracles and has earned its place on our windowsills.

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