The Scientific Monographic History of Aloe Vera and Aloe Arborescens

Discover the therapeutic medicinal, nutrient and detoxifying properties in this plant that help beat almost any health challenge for Optimum Health and Longevity.

Father Romano Zago OFM ~ *Brazilian Scholar & Author of "Cancer Can Be Cured" and "Aloe Isn't Medicine and Yet... It Cures!"*

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Father Romano Zago, OFM

(Order of Friars Minor)

Table of Contents

Father Romano Zago, OFM

Brazilian Scholar and Author

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To The Readers: By Father Romano Zago, OFM

The inspiration for writing this second book that is now added as an Appendix came from my fellow Brazilian co-nationals, who allowed me to dedicate my body and soul to this project. According to recent statistics, Brazil is one of the richest natural resource countries in the world, yet its approximately 50 million people – about one third of the country's total popula-tion – continue to live in poverty.

People like the Brazilians are unable to imagine the idea of having a health plan. Public health in Brazil has been trans-formed into a professional degradation, poorly remunerated for the way the system works. This has created an extremely precarious health care system. It is not unusual to find patients waiting months for a doctor's visit. Often, they end up dying in the hospital corridors. Medicines and other aids are inaccessible because of their high cost. It is for this reason that I have decided to write this book. I would like to try and share in their pain, and I apologize for expressing my opinion regarding this matter. But it is the only way I am able to ease my conscience. I realize that my attempt is not enough, but it is what I have learned to do. If this book helps decrease suffering and contri-butes to the increase in economic possibilities for my people, then so be it. It will be a good reason to cry for joy and for my commemoration.

Aloe is a Food

It is important to know that, for its impressive arsenal of medicinal properties, Aloe is defined as being proudly "self-sufficient" in chemical terms, leaving the rest to economic matters. Aloe is widely known to man through ancient cultures but is often ignored by arrogant Western allopathic medicine.

If you choose to take Aloe, you will benefit nutritionally because it is a complete food. Aloe is a collection of useful and essential nutritional elements such as enzymes, vitamins, pro-teins, amino acids, minerals, oils, monosaccharides, polysac-charides, etc. In 1873, German medicine during the time of Bismarck had already dealt with more than 300 medicines that contained Aloe. Today's literature confirms that research being done in laboratories is honestly and objectively searching for the truth. It is peculiar that misinformed people insist that Aloe does not contain any element useful for medicinal purposes. The refusal to recognize the positive and curative effects that plants or herbal hydrotherapy have on people demonstrates a widespread ignorance about Aloe.

Science is used when one has to search for the truth. The Gospel states: "The truth will save you."

The Difference Between Aloe Vera Barbadensis Miller and Aloe Arborescens Miller

The botanical type of Aloe, already classified within the Liliacee family, is currently included within the Aloacee family. This includes a large variety of approximately 350 species of plants found throughout the entire planet, including evergreen, large and leafy plants, and those which have elongated, colorful flowers that range from orange to scarlet red. The leaves and bark of these plants come in various shapes and sizes. Their dimensions range from large-scale plants to miniature ones. The smaller ones are used mainly for food, herbal hydrotherapeutic, and cosmetic purposes. Aloe Barbadensis Miller (Aloe vera) and Aloe Arborescens Miller are included in this group and are widely known for their innate characteristics.

Aloe Barbadensis Miller (Aloe Vera)

Aloe Barbadensis Miller (Aloe vera) is a perennial plant with green succulent and full foliage. The leaves contain a vast amount of gel in their external cuticle. The various substances present in these leaves highlight an acemannan polysaccharide involved in the process of immuno-modulation and an anti-inflammatory action that is significant in the field of hydrotherapy. Aloina found in the plant belongs to the anthraquinone molecular family. This family has specific functions and is used for draining, laxative and purifying purposes. Today, among natural plants, Aloe vera is the most recognized type of plant in this family. This is because the gel found within the leaves of this plant can be easily transformed into pulp and used as a drink or as an ointment for topical purposes. In fact, various molecules possessing herbal therapeutic traits are found in this type of plant, but in less quantity than those present in the smaller leaves of Aloe arborescens.

Aloe and its increased medicinal value: Aloe Arborescens Miller

Compared to Aloe vera, Aloe arborescens has narrower leaves and wider external cuticles that contribute to keeping the plant alive in extreme environmental conditions. This morpho-logic characteristic allows for a greater presence of anthraquinone elements within the plant, giving it laxative, antiviral and antimicrobic effects. The gel content within Aloe arborescens is proportionally less than Aloe vera. This in turn is less attractive for commercial reasons, forcing Aloe arborescens into a less important position, even though the latter has superior thera-peutic qualities than Aloe vera. This was shown in a recent international bibliography.

Aloe arborescens is now being cultivated in Italy, allowing the commercialization of products containing it as a principle ingredient. It is becoming possible to purchase products that have Aloe arborescens as a base ingredient, maintaining the plant's biochemical and hydrotherapeutic characteristics. This is the case in both cosmetic and food products. Due to industrial contamination, the production and use of Aloe vera in Italy has been mostly discontinued. Often, it is imported from other countries at a low qualitative and beneficial level.

Recent studies administered by the Palatinin Salzano Venezia Institute in Italy have discovered that Aloe arbore-scens is 200% richer in medicinal substances than Aloe vera and contains more than 70% of anti-cancerogenous properties (active ingredients) as opposed to Aloe vera, which contains 40% of these properties.

Aloe throughout the Times

It is practically impossible to separate the legends of the past with what actually happened regarding the use of Aloe in ancient societies. Legends, myths, history and antique research are so intertwined that it is impossible to know where one ends and another begins. In any case, today many of these myths and incorrect facts are active propaganda for some of the most current Aloe information agents.

According to history, the first people to transform Aloe into a commercial extract were the Arabs, which provides a starting point as to when and how Aloe was used on a daily basis. Following the Arabs came the ancient Greek culture, leaving this knowledge of Aloe in Rome, Atlantis, Asia, and Africa. It even made its way to Alessandro Magno (who occupied the island of Socrates and made a point of always having a large supply of Aloe to cure his wounded soldiers during battle). The knowledge of this plant's versatile healing capability moved on to Europe, and then to the Americas via Christopher Columbus.

Today, some still insist on believing that Aloe was brought directly from the Garden of Eden, while other more appro-priately informed people maintain that the plant comes from the ancient continent of Atlantis. It is said that the Atlantics possessed various industries in Egypt, Yucatan and the Canaries. This would explain why this plant was present in the past as well as in the Mayan and Toltec civilizations.

For the Mexican native Indians, Aloe remains their sacred protector of excellence. Today, little Mexican shops always have at least one Aloe plant on display. Coincidences exist between ancient Egypt and Mexican pre-Columbian culture, such that international scholars leave one to think that the link between these two cultures could be the disappearance of the Atlantis Island, which was meticulously

described by Plato in his works.

The History and Benefits of Aloe

Aloe belongs to the botanical Liliacee family, meaning not the type of plant but the genus of plant that today has been named Aloacee for its more than 350 varieties. We know today that only three or four of these varieties have medicinal properties, including Aloe vera barbadensis and Aloe arborescens. The word Aloe is derived from the Arab word Alloeh, which means "sour substance." It was associated with the Latin word "vera" because in ancient times it was common to consider this type of plant to be more effective in popular medicine. Aloe grows well in tropical climates, such as the hotter regions of America, Asia, Europe and Australia. It prefers a sandy texture to grow in. The Aloe plant is similar to the cactus, for it is capable of retaining large amounts of water to ensure its survival in dry climates.

The Fascinating Story of Aloe as a Natural Remedy for the Egyptians: "The immortal plant"

It is not known the exact period in history when the Aloe plant started to be recognized as a medicinal plant. One of the first documentations of this plant being used as a medicine dates back to 2100 B.C. as found on a piece of clay. However, drawings of this plant have been found in an antique Egyptian temple that dates back to 4000 B.C. Aloe has been forever encircled by a halo of myths and legends, so much so that in some cultures it is considered to be divine, venerated for its healing properties. Whatever the truth may be, it has been historically proven that, dating back to Christ, Aloe has always played a significant pharmaceutical role in antique cultures.

Indisputable proof of the use of this plant exists in regions such as southern Europe, the Orient, Asia and the Americas, etc. One of the most detailed accounts of the earliest uses of Aloe can be found in the Egyptian writing of "Papiro Ebers," dating back to 1550 B.C. This writing documented a series of recipes using Aloe, together with other ingredients, to treat various internal and external ailments. Ancient Egyptians called Aloe "the immortal plant." This explains its use in the embalming process, its importance in the burial rites of pharaohs, and its use by Queen Nefertiti and Queen Cleopatra. Both these beautiful women owe their beauty to their daily Aloe baths. It is said that one of Cleopatra's servants would regularly use one of the Queen's creams containing Aloe to be as beautiful as her mistress.

After many years of slavery in Egypt, the Jews adopted various Egyptian funeral rituals and, according to legend, King Solomon appreciated and cultivated his own Aloe for its therapeutic and aromatic agents.

Aloe and the Greeks

The botanical and pharmacological use of Aloe was widely accepted by the Greeks from the Egyptians and Mesopotamians.

Using his aphorisms, recipes, diets, and measuring techniques, the ancient Greek doctor Tippecanoe influenced the Roman world as well as the medieval one. He was the first to organically and systematically classify 300 medicinal plant species.

The philosopher Aristotelico Teofrasto (372-287 B.C.) wrote *Historia Plantarum*, in which he lists all the different varieties of plants in that period, including the Aloe plant.

Pedanio Dioscoride, Greek doctor and naturopath, who originated from Cilicia (modern day Turkey), wrote "De Materia Medica" (medical matters) while he followed the Roman army in Asia Minor. His work is one of the first authoritative texts that dealt with botany and pharmacology, in which the use of Aloe was fully outlined. Aloe was used to treat ulcers and wounds, insomnia, alopecia, intestinal upsets, constipation, hemorrhoids, gingivitis, bladder problems, burns, etc. Dioscoride had visited the Orient as a military doctor and found Aloe-based remedies useful for 800 clinical conditions. His pharmacology was highly considered among the Arab countries. The respect that Muslims have for Aloe is due to his works. At the same time, in the Latin world, Plinio Il Vecchio (23-79 A.D.) became famous for his work "Naturalis Historia." He confirmed and amplified Dioscoride's theories combining scientific notions with superstitious and magical beliefs.

It is common in today's society to assume that a prescription including Aloe is something of a magic ritual. However, if they carefully examine the prescription, they realize it is a reasonable answer to whatever ailment exists.

For example, when Plinio Il Vecchio recommended that to fight alopecia, one should massage the hair follicles with Aloe juice and alcohol and be in direct sunlight, this was not out of this world. In reality, alcohol together with the sun's heat helps in the opening of the skin's pores, allowing the mixture to penetrate, thus revitalizing the bulb of the hair and stimulating its regrowth.

Galeno (129-210 A.D.) wrote about hypocratic medicinal forms in his Ars Medica. He knew of approximately 500 vegetable-based substances and an array of animal and mineral ones as well. Galeno advocated the "Pica" substance as being one of the best. This substance has Aloe as its principle ingredient.

Another noteworthy reference to Aloe can be found in the New Testament, specifically in the Gospel according to John (Cap. 19, V. 39). He writes that Christ's

body had been sprinkled with an oily and aromatic mixture. Recent laboratory studies have discovered traces of Aloe, Mira and plant pollen found in Palestine during those years, thus proving the truthfulness of what was written in the Gospel.

"The silent healer"

In the past, cavalrymen were known to have drunk a mixture of palm wine, Aloe and hemp pulp. This drink was called "elixir" of Jerusalem because it was known to have miraculous capabilities that guaranteed health and longevity. In 600 B.C., Aloe had been introduced into Arab, Persian and Indian markets. The Arabs were clever in discovering the way in which the Aloe plant was to be cultivated to gain medicinal benefits from it. They used it for both external and internal purposes, and the Bedouin tribes and the Tuareg warriors referred to the plant as the "lily of the desert." They separated the plant's gel and lymph from the leaves, folding the leaves with their bare feet. They then poured the pulp onto goatskin, which was set out to dry in the sun. After the process was complete, the pulp was grinded and reduced to powder.

The Indus of the Indus Valley civilization (c3300-1700 B.C.) believed that Aloe grew in the Garden of Eden and named it the silent healer. Ancient Chinese doctors considered the Aloe plant to be endowed with therapeutic properties, and they called it "harmonious remedy."

Appreciated by important ancient people

In America, the Mayan people used the plant for ages. Women used it to hydrate their skin and to wean babies. In Florida, the Seminole Indians believed Aloe was capable in rejuvenating and considered it the "fountain of youth."

The first certain reference to the use of Aloe in the past is in 41-68 B.C. by Dioscoride. He was otherwise known as the Greek herbalist. This doctor gained insight into the use of Aloe while he accompanied the victorious Roman military. He wrote what was considered to be the first detailed description of the Aloe plant. He outlines that the content found in its leaves could have been used for chronic boils, hemorrhoids, to heal foreskin, to prevent dehydration, ulcerated genitals, gingivitis, throat and tonsil inflammation, and to stop hemorrhages.

Plinio Il Vecchio (23-79 A.D.) confirmed Dioscoride's beliefs, but went further to declare that Aloe was useful for many other upsets and was also able in helping to reduce perspiration. The use of Aloe for medicinal purposes gained international acclama-tion popular during medieval times and the Renaissance. It became

increasingly popular in northern Europe, but because this plant grows in mild climates only, it was quickly abandoned.

The constant use of Aloe is also noted by Marco Polo, as well as Christopher Columbus during their travels to Cuba and many Caribbean islands where it was mainly used to cure boils, as well as insect and snake bites. Written in one of Columbus's diaries was the following: "There are four important types of vegetation essential for man's well being. These are grain, grapes, olives and Aloe. The first nurtures, the second brightens one's spirits, the third promotes harmony and the fourth cures."

Almost Supernatural Properties

Knowledge of this "miraculous plant" has been orally passed down from one generation to the next. The various uses of this plant have been written about and archived for years by royal doctors. Priests used it in many religious rites. It isn't a coincidence that Aloe was cited in the Gospel as having been spread across Christ's body after his death. The Jesuits discovered Aloe in the fifteenth century after reading Greek and Latin scientific writings that described its benefits. The Jesuits used the plant they found by chance, cultivating it where no Aloe was to be found. They passed along information regarding the Aloe plant in various American regions. After conquering the natives, the Jesuits founded their mission, promoting the widespread use of Aloe throughout present day Latin America.

"I asked myself what were my secret strengths during my hunger? Yes, it was my undying faith in God, my frugal and simple way of life, and Aloe, realizing its benefits at the end of the XIX century during my arrival in South Africa."

Mahatma Gandhi 1869-1948

The Chemical Composition of Aloe Arborescens

The use of Aloe for cosmetic, medicinal, nutritional and therapeutic purposes was the result of the enthusiasm regarding this plant and its uses during past centuries, even though its exact chemical composition was not known. As a result of intense and systematic analysis of this plant over the past 40 years, it is now possible to establish the chemical-physical and biochemical-nutritional characteristics of this plant. Work in this field has grown immensely and it is now possible to establish each single biological property of every molecular group that is part of this type of useable plant. Recent studies have promised to enrich the chemical knowledge regarding Aloe. Its results show that Aloe arborescens is made up of a vast series of compounds that can be classified into three large groups:

- **Carbohydrates**, which include polysaccharide mannan (acemannan) and glutens – with immunomodulation;
- **Anthraquinone and phenolic substances** present in the cuticle and leaf, having a laxative, depurative, anti-inflammatory, analgesic and anti-microbiotic effect;
- **Important nutritional and functional molecules**, such as mineral salts, vitamins, amino acids, organic acids, lipids (polyunsaturated fatty acids) and enzymes.

The average percentage composition in the natural chemical components of the Aloe arborescens per 100 g. of s.s. This is about 7% protein, 2% lipids, 22% ashes (includes all the diverse mineral elements of the plant), 70% carbohydrates (which contribute to numerous types of complex and simple glycids) and finally, a quantitative but not relevant percentage (but bio-logically important) of vitamins present (free amino acids and all other organically natural molecules with chemically different characteristics). These represent a part of the diverse active ingredients, biologically effective and characteristically part of the Aloe species.

Water is characterized as the largest component in Aloe. It makes up approximately 96% of its fresh weight and is distributed throughout 90% of the plant's cuticle and 98% of the trimming of the plant's leaves, whereas it makes up 99% of the plant's essence.

Carbohydrates Found in Aloe Arborescens

Carbohydrates are organic molecules that are most diffused throughout plants. Primarily, they are found in vegetation, where all plants present a qualitative pool of similarities. Nevertheless, some of them can be differentiated by the presence of specific molecules of this class.

Monosaccharide

Simple glycids are found in the Aloe plant, particularly glucose and magnesium. They make up roughly 10% to 25% of the dry variable within the diverse components of the leaves, cuticles, veins, and essence. The glucose represents more than 95% of the total soluble glycid amount. The remaining fractions are composed of other types of non-important glycids. Glucose is metabolically glycidic, our bodies use it, and it's important our energy level is based on this nutrient.

Polysaccharide

Numerous types of polysaccharides are present in Aloe with exceptionally high concentrations. The most important poly-saccharide with respect to hydrotherapeutic activity is acemannan. This substance is the majority substance found throughout the cells of the leaves.

The percentage of polysaccharide in Aloe is important for the cosmetic and hydro pharmaceutical industries. For topical use, this macro-molecule guarantees an appropriate application of water on the skin, forming a semi-permeable base that causes hydration of the skin, leaving it soft and elastic. When swallowed, mannan properties are absorbed not at a gastro-enteric level, but rather at an intestinal mucus level, allowing endocitosis. They are capable of strengthening an organism's immune system, activating the lymphocytes and macrophage cells needed for fagocitic activities, capable of eliminating strange and toxic material in the organism. The acemannan performs bacterial and anti-fungal activities. It also is known for its ability to form gel and protecting gastric and intestinal mucus from damaging agents like chloric acid and gastric acid.

Anthraquinone Molecules

Molecules consisting of anthraquinone chemicals make up a vast group of substances that possess numerous hydro-therapeutic properties. The regulatory actions on intestinal motility are clearly recognized with the increase of peristalsis and with laxative effects. The principal molecules of this group are: Aloemodin, Aloin, Aleolithic, Antranol, Crysophanic acid and Resistanolo. Most of these products are recognized

within the pharmaceutical family and are used to create laxatives and digestives. In people who are extremely sensitive to medicine, it is common to experience diarrhea when beginning to take Aloe. This condition usually disappears in a few days. It is for this reason many producers of food containing Aloe vera deprive the Aloe gel within the anthraquinone level of its ability to filter the active carbon.

It should be noted that this procedure also removes another important component useful for hydrotherapeutic purposes and also anthraquinone properties that modulate the different physiologic choices the body can use for self-deprivation. To eliminate the inconvenience caused by the use of carbon filtering, it would be advisable to keep the anthraquinone properties, monitoring their exact presence level. This way, their important anti-bacterial and antiviral properties can be used, causing citotoxic effects on tumorous cells characterized in some anthra-quinone molecules.

Aleolithic Acid

This molecule represents a natural antibiotic action, particu-larly in association with other anthraquinone molecules present in Aloe.

Cinnamic Acid

Chemical product having intense antibiotic, antibacterial and germicidal effects needed to combat various bacteria, including salmonella, streptococci and staphylococci. The bacteria that cause peptic ulcers have been proven to be inhibited by this product. The hydrotherapeutic properties of this molecule, being of a phenolic nature, include the inflammation process and the defense against UV rays.

Crysophanic Acid

This molecule is also of anthraquinone nature and presents similar properties to those described for this group of molecule. It is a good purifying, diuretic and laxative agent, having eupeptic and tonifying properties.

Aloemodin

This is an anthraquinone molecule that originates from aloin, resulting from a division from a glycoside relationship producing an arsines and Aloemodin liberation. This molecule has important citotoxic effects on specific predaceous and cancerous cells

Aloin

This is a principle agent exclusively present in Aloe and is made up of different anthraquinone glycoside derivatives. It is present in the form of two isometric indicators, such as Aloin A and B, and is the wildcard molecular denomination that better represents this class of composts. Other denominations are used when its exact origin from other forms of Aloe is indicated. For this, the molecule is indicated in parabolic terms if it is derived from Aloe barbadensis, Socaloin if it is derived from Socotrin Aloe, etc. This molecule has antibiotic, puritive and laxative agents.

Phenolic Compositions

The fraction of molecules being of phenolic nature and having antioxidant effects consist of Cinnamic acid derivatives, cumarinic molecules, flavinoids, polyfunctional organic acids and tocopherols. These molecules play an important role in contrasting free radicals and oxygen-reactive species that are responsible for numerous negative effects on the body. A classic example of this is the aging process. Various phonological composts within the Aloe plant have been highlighted within the cumarinic group of molecules and present in the form of glycosides. These molecules show intense antioxidant activity, similar to that of tocopherols. Aloeresine A and B are phenolic-natured molecules present in Aloe arborescens.

Salicylic Acid

This substance is vital in the making of aspirin. With regards to Aloe's essence, this acid performs antiseptic, painkiller and anti-inflammatory functions.

Other Components

Other molecules and hydrotherapeutic activities are present in Aloe arborescens, among them sterol, vegetables, triterpen, saponines and lignin.

Nutrients Present in Aloe

The Aloe plant appears to be qualitatively rich in vitamins and in mineral salts, even if their quantity is modest. This allows Aloe's essence to be pure, making it comparable to nutritional supplements containing a high concentration of vitamins and minerals. It is proportionally balanced and optimal for regulatory effects produced by this product.

Mineral Salts

The Aloe plant has numerous macro-elemental minerals. These include calcium, magnesium, potassium and sodium. These elements are most commonly found, yet there are other less common elemental minerals that also are present in Aloe. These oligoelements serve a particular function in the organism and include magnesium, iron, copper, zinc, and chrome. It is important that all macro elements are present within an organism and function in conjunction with one another to maintain an appropriate functioning relationship between them.

Sodium

Sodium is a fundamental mineral found within the organism's liquid content. It is found in cation form and is associated with ion, chloride or bicarbonate. Sodium is the most characteristic cation within extracellular liquids and is capable of regulating the osmotic processes within this section of the organism's liquid content. It is important in maintaining the aqueous saline balance and has to be present in properly defined quantities. Together with calcium, this element has an important role on the micardic properties. In the form of sodium choride, sodium stimulates appetite and helps in the digestion process with the secretion of gastric juices and with chloric acid.

Potassium

This element is most widely present within the intracellular liquid in cation form and is associated with chloric ion. It parti-cipates in intracellular osmotic processes and is an important element needed for muscle tissue. It possesses excitatory pheno-menon that include the body's nerves, heart, both streaked and relaxed muscles, and endocrine glands. An insufficient supply of potassium could result in many malformations, including cavities, bronchitis, circulatory pain, acne, colds and a much slower healing process for wounds. In the case of hypogly-cemia, the delicate relationship between potassium and sodium is in jeopardy thus giving rise to a serious imbalance of the hydria saline.

Calcium

Calcium is the most represented mace element in our body. It makes up 2% of our total body weight mainly as a component in our bone density. Like catione, it is present in both extra-cellular and intracellular sections of our body. It has an important bio-chemical and physiological function. Having numerous enzymes dependent on calcium and on biochemical and physiological processes, this mineral is the modulator for the metabolic paths, including the coagulation of the blood, muscular contractions, the functioning of the nervous system and of the heart. Aloe contains approximately 5% of the dry weight total of a leaf.

Magnesium

Directly related to calcium, this mineral element is present in bivalent cation form and is abandoned in the intracellular liquids where it acts upon many enzymatic systems. Like calcium, it is present within the bones and occupies approximately 50% of the total magnesium found within the organism. It is vital for muscular growth, individual vitality and especially enzyme functioning involved with cellular oxidization. It is an important factor in the immunological system and its weakening provokes bacterial and viral aggression on the body. It is involved with synaptic nerve transmission and has calming and anti-depressive functions. It ranks fourth with respect to mineral content, making up 0.8% of the dry weight within the Aloe.

Oligoelements

The oligoelements just slightly present make up less of a percentage within the living organism, yet they perform regulatory functions needed for metabolic regularity. There fails to be a direct correlation between the slightly present elements and microelements that make up a larger percentage of the total. Usually, the practice is to classify the oligoelements present in the body's tissue on a basis of one thousand or in concentration inferior to this number. Generally, all the elements found within a living organism's environment can be assumed, so that all of the elements just barely present within an organism ought to be numbered or almost all those elements that are known. In reality, it is vital that these minimally present elements are existent because they perform the necessary functions for survival or at least for the organism's well being. In most cases, these elements perform catalytic functions via the combination of molecular proteins. These barely present elements are essential components to various enzymatic systems. Many of them react on the basis of their capabilities in forming complex formations of enzymatic proteins they contain.

Manganese

It is chemically similar to magnesium but has different functions with respect to the organism. It has high antioxidant powers and contributes to the slowing down of the aging process. It is principally found in the liver and in muscle tissue. It is important for breastfeeding children and for natal development. A deficiency of this mineral may cause excessive irritability, convulsions and vessel dilation. It is directly related to calcium and potassium with respect to metabolism.

Iron

Iron is inappropriately considered an oligoelement because our bodies contain 5g of it and it is too much to consider this element as having just a trace quantity. Its importance within the body is very well known. It is needed for both the external and cellular respiratory process, belonging to the prosthetic hemoglobin and cytocromic groups. Iron present in one's diet is intestinally absorbed. Almost the entire digestive system is capable of this absorption. For this reason, the ferrous form is preferred as opposed to the ferric and ascorbic acid because it may bring an increase in the absorption of this mineral. Various dietetic factors may result in a decrease of this mineral's absorption, causing anemia.

Copper

Copper is an important element for the well being of organisms. The liver contains a major concentration of this mineral (6,6 g/g of tissue), followed by the brain (5,4 g/g of tissue). The average quantity of copper found within vertebra organisms is about 1,5-2,5 g/g of lean tissue. In total, approxi-mately 100-130 mg of copper are present within the human body. Copper is necessary for adequate erythropoiesis (the process to form red blood cells), perhaps because it is required for the release of iron into the tissues. It is also necessary for connective tissue maturation.

This mineral enters into various enzymatic constitutions that are generally involved with the catalase oxyoreduction. The lack of copper within one's body prohibits the absorption of calcium and phosphate into bone mass. In addition, a lack of this mineral determined by normal catalase conditions prohibits the accumula-tion of oxygenized water, thus resulting in self-intoxication. According to some scholars, cancerous states could result from a decrease of catalase activity.

Zinc

Two to three grams of our body are made up of zinc, and it is primarily found in the liver and pancreas. It is fundamental for the proper functioning of various enzymes. This mineral has an important nutritional role. The degree of carbohydrate and

protein absorption into the body depends on the level of zinc found in the body.

Chrome

Generally, animals have a very low level of this mineral in their systems, approximately 0.1 ppm. Chrome is scarcely absorbed in the intestines, allowing for only 0.5-3% of regular chrome intake unabsorbed into an organism. It is eliminated via urination and feces. With respect to the plasma, chrome is transported from the transferrins in the same way as iron. The biochemical function of this mineral seems to be related to insulin and to the transportation of cellular metabolites through to the cellular membranes. Insulin requires the presence of chrome to perform its duties. Without insulin, chrome cannot have an insulin-based effect on the organism.

Cobalt

This oligoelement is minimally present in the human body (approx. 20 mg) and is concentrated in the spleen, pancreas and liver. The lack of this mineral may cause a reduction in the content of hemoglobin in the blood. It is part of the B12 structure and reacts to erythropoiesis (the natural process of production of red blood cells that occurs in the bone marrow) and allows for protein and carbohydrate regulation of the metabolism.

Vitamins

These molecules are needed for the biological functioning of living organisms. They are nutritionally essential and must be introduced into the body via food intake or in pro vitamin form that is non-synthesizable by our cellular systems. Perhaps the total amount of vitamins obtained directly or indirectly by animals is capable of being synthesized. These molecules per-form a regulatory function with respect to cellular metabolism. The water-soluble vitamins make up various indispensable co-enzymatic forms needed for numerous enzymatic activities, while those classified fat-soluble perform other types of actions, though always along regulatory lines, including hormonal activities (Vitamin D is a precursor to a hormone action mole-cule). The availability of vitamin-based nutrients ensures an optimal level of health, while a lack of vitamins caused by food intake or an alteration in the organism's functions can cause particular and specific pathological states. In extreme cases, it may even cause death. An excess intake of water-soluble vita-mins will not cause any detrimental effects, but an excessive intake of fat-soluble vitamins, meaning Vitamins A and D, can be toxic. When it comes to nutrition, it is advisable to assure an accurate vitamin intake by consuming foods that will replenish and balance various vitamin factors as opposed to resorting to medicinal ones.

The Aloe arborescens plant presents discrete vitamin content. It can be qualitatively and quantitatively appreciated.

The following list outlines the vitamins present in this plant and a brief explanation of the biological activities of each of these vitamins.

Water-Soluble Vitamins

Vitamin B1 or Thiamine

Constitutes an important co-enzymatic form of enzymes involved in energetic cellular metabolism. It is fundamental for the growth process of body tissue and for the proper function-ing of the nervous system. A lack of this vitamin may cause severe anemia, neuritis and edema.

Vitamin B2 or Riboflavin

Participates in cellular respiration and in the replenishment of the organism energy level. A lack of this vitamin may cause dermatitis and hematological ulcerations.

Vitamin B3 or Niacin

Regulates metabolic energy and participates in the process of glucose use. A lack of this vitamin may cause pellagra.

Vitamin B6 or Pyridoxine

Constitutes all the co-enzymes of all enzymatic activity proposed by the use of amino acids. It regulates the nervous system, contributing to the functioning of the skin.

Vitamin C or Ascorbic Acid

Perhaps the best-known vitamin. In high dosages, it continues to perform preemptory actions with respect to the common cold to microorganism infections. It is also internationally used to fight against common cold symptoms. It helps to fight against antioxidant and free anti-radicals. It is an effective protective agent for the organism, promoting tissue growth, wound healing, and polysaccharides synthesis and collagen formation. It main-tains the mucous function and is essential for bone and tooth formation. Lack of this vitamin promotes scurvy.

Folic Acid

This vitamin is present in all green leaves and is found in human liver and kidneys.

Under co-enzymatic form, it participates in numerous reactions that involve mutilation of various vital molecules for the organism, such as thiamine, a DNA com-ponent. Together with B12, it is useful as an anti-anemic vitamin. Lack of this vitamin may cause megoblastic anemia.

Cholene (Vitamin B Group)

An organic compound that is a necessary nutrient. In reality, it can't be considered a true vitamin because it can be synthesized within the organism. In any case, it performs specific roles. It's the precursor to acetylcholine, a neuron-transmitter, and performs functions relating to mobilization mechanisms and aids in the transportation of bodily lipids. Lack of this vitamin may cause fat infiltration into the liver.

Fat-Soluble Vitamins

Vitamin A and Retinol

This vitamin is not present in vegetation, but it is quanti-tatively represented in various forms. Carotene is an example of this. This vitamin factor intervenes throughout numerous cellular metabolic processes. It is involved in the muco-polysaccharide synthesis mechanisms and in the proteic synthesis process, as well. It contributes to cellular membrane stability, namely mitochondrion and lisosomes. It performs a specific biochemical function regarding sight. Lack of Vitamin A determines night blindness, dryness and desquamation (peeling) of the skin and increases the chance of infections.

Vitamin E or Tocopherols

This vitamin is a potent antioxidant. It protects membranic lipids from oxidant processes, free radicals and from reactive oxygen reactions. It is associated with the skin's well being, tissue growth (namely the liver, kidneys, intestines and genitals). It promotes the production of bone marrow. Lack of this vitamin may cause skin ulcers, anemia and bone malformations. High doses of this vitamin help fight infection. Various experimental results show the effectiveness of this vitamin against carcinogenic agents. It has always been considered effective in respiratory insufficiency, in pneumonia and in asthma cases. A good quantity of this vitamin is found in the gel of the Aloe arborescens leaf.

Protein

The content of protein in Aloe is comparable in terms to other vegetation. It represents 7% of dry weight, considering that 96-97% of the Aloe leaf is made up of water. This quantity of Aloe is not regarded as being elevated. The protein component in the Aloe is nevertheless important for two reasons; a) the presence of determining enzymes within the cellular structure of the leaf that perform specific functions and which are involved in hydrotherapeutic aspects of some digestive actions, and b) the various proteins present in the Aloe after their digestion contribute to the refurbishing of amino acids, even if it is quantitatively limited for our bodies.

Enzymes

Enzymes are protein-natured molecules that allow for the development of all vital functions within a cell, increasing reactional velocity that characterizes cellular metabolism. In their presence, all biochemical reactions happen immediately. Most importantly, these reactions are compatible with life. The most important enzymes are the following:

- **Bradykininase** – it is a proteolysis nature's enzyme that in a specific way catalyzes bradykinin peptic molecular degrada-tion. This peptic is capable of stimulating an inflammatory response to an allergenic agent that enters our bodies. For example, this can happen through an open wound. Bradykinin is responsible for pain and post-traumatic tume-scence of the tissue. Bradykininase enzymes contained in Aloe stimulate the immune system by activating local macrophages. It performs an analgesic, anti-inflammatory and wound healing function, degrading the bradykinin.

- **Catalase** – this enzyme deals with the degradation of oxygenized water that is formed in some metabolic reactions in which it has a toxic effect, activating free radicals. When using Aloe for topical reasons, the catalase could act as a detergent in burn and ulceration cases, favoring scarring and thus introducing fibro-blast production. Amylase, cellulose, lipase, carboxypeptidases and other protease are other enzymes present in Aloe that can be placed in this classifica-tion. These enzymes can help with the digestive system, contributing to the degradation of vitamins assimilated via food intake.

- **Amino acids** – these molecules make up the unit base of protein. There are 20 types of these molecules. Nutritionally speaking, some of these are more

important than others because they are not produced within the body itself. To replenish the body with these, we must ensure that we are properly nourishing ourselves. Aloe helps the body replenish itself with amino acids, especially the essential ones, even though the amount of absolute protein is relatively low.

Aloe Arborescens: A Healthy Contribution from a Usable Plant

Biological and Herbal Therapeutic Characteristics

Aloe has many biological and herbal therapeutic properties, as proven by the extensive research done this past century. This research has characterized the use of this plant in greater depth than what was thought many years ago. Aloe's properties allow it to be used for a vast array of small and large pathologies in which its active components are used. Today, scientific literature discusses many different pathologies that may occur in our bodies for which the use of Aloe is appropriate. Aloe has been used for herbal therapeutic as well as for health concerns, as documented in medical-scientific journals. Animal and controlled laboratory research has proven the effectiveness of Aloe for various pathologies and these results have been published in international biomedical journals. In addition, you will find Aloe in common households being used as a topical cure for small ailments. American and South American researchers support a school of thought that believes in the herbal therapeutic properties of Aloe, referring exclusively to the acemannan polysac-charide molecules. American Aloe-based products commonly eliminate Aloin as well as other principal agents. We should note that the positive effects of Aloe on the body depend on a coordinated use of the product, not only the present poly-saccharides but also the other molecules. The herbal therapeutic properties of some of these molecules are widely recognized in the official pharmacopoeia and in biochemical research. There is a very important synergistic role between amino acids, vitamins, mineral salts, glycids, polyunsaturated fats and certain enzymes.

With its botanical attributes, biochemical composition and biological characteristics, it is important to consider that Aloe possesses a variety of herbal therapeutic properties.

Recognized Antioxidant Properties

Antioxidant properties biochemically belong to all those chemically diverse molecules, in that they are capable of neutralizing numerous nitrogen and oxygenic free radicals, as well as the species that react to oxygen that are responsible for molecular and subcellular alterations, thus causing the onset of the aging and precancerous processes. Anti-oxidant molecules present in Aloe arborescens are numerous and include magne-sium and copper, Vitamins B2, C and E, and anthraquinone and phenolic molecules. Magnesium and copper are active consti-

tuents of the superoxydic and peroxidasic glutatonic enzymes that perform antioxidant and anti-aging actions for the body as well as the skin. Similarly, Vitamin B2 permits the maintenance of a high cellular level of reduced glutton, the anti-radical molecule. Vitamin C is a typical antioxidant in the intracellular environment (especially regarding white blood cells), while the same function is administered by Vitamin E with respect to cellular membranes lipids. Even anthraquinone and phenolic molecules are effective antioxidant agents. Therefore, the use of Aloe guarantees an appropriate agent molecular consistency that enhances the body's antioxidant reserves and fights cellular and tissue aging.

Peculiar Anti-Aging Properties

More than just an antioxidant property, Aloe arborescens helps maintain the youthfulness of the skin. This is thought to be as result of the plant's capacity to increase the production and growth of fibroblast up to 6-8 times. These derma-localized cells are responsible for the production of collagen. Collagen is a protein that leaves the skin soft and elastic. During the aging process, these cells reduce collagen production, leaving the skin with less elasticity and more dryness, resulting in wrinkles.

Aloe is capable of increasing fibroblast production, increasing the production of collagen. The key to this process is tied to Aloe's polysaccharide action on fibroblast multiplication and to their hydrating properties. These effects tend to rejuvenate the skin, reorganizing its normal tegumental look and reducing the visible lines of aging.

Evident Antibacterial, Antimicrobic and Antiviral Properties

Specific molecules included in Aloe arborescens sustain each of these properties. Aloe is capable of retarding the development of bacteria and fungi because of the presence of two organic acids: Cinnamic and Crysophanic. Their citotoxic characteristics are due to their anthraquinone components within the molecule, which affects the patogeneous cellular agents. In particular, Crysophanic acids have a positive action on fungi, which can easily enter our bodies via the intestines. In addition to being a fungicide, this molecule has a laxative and depurative effect as well. Simply, it allows for the removal of toxic waste produced within our intestines. The antibiotic property is given to Aloe via the presence of glycosides.

Glycosides are considered to be an anthraquinone structure that is similar to aloetic acid and Aloin and contributes acemannan polysaccharide and Bradykininase enzymes. This enzyme is particularly presented within the Aloe arborescens. All these factors put together result in the activation and participation of macrophage

and interleukin production on the immune system.

Specific Anti-Inflammatory and Anti-Pain Properties

Throughout past centuries of Aloe usage, anti-inflammatory and anti-pain properties are perhaps its most known and appre-ciated herbal therapeutic characteristics. Its calming and soothing actions are similar to steroid-based anti-inflammatory medicines without the collateral effects. Aloe's active anti-inflammatory components can be identified in three vegetable steroidal-based molecules: composterol, sitosterol and luteol. These three mole-cules act to inhibit the prostaglandin's effects. Aloe's effective and immediate control on the swelling process is also a result of the acemannan and its Brabykininase. The first activates the phagocytes and the second determines the brandikin's degrada-tion and other interleukin, which in turn are liberated from the swelling process. This intense activity produced within a body's swelling components has anti-pain and soothing effects. These effects contribute to the salicylic acid and anthraquinone molecules. Similarly, this effect is also experienced with Cinnamic acid and isobarboloin, which are also components of Aloe arborescens' active ingredients.

Cicatrizing (Wound Healing) Characteristic Properties and Epithelial Stimulated Growth

With respect to wound healing, Aloe's cicatrizing properties date back to Alessandro Magno. Whether used topically or administered orally, Aloe's positive healing effects are partly related to the plant's anti-inflammatory capabilities. The princi-pal characteristics of the plant produce diverse mechanisms that are involved in the positive processes. This is caused by an inhibition reaction in the anti-inflammatory process and in the stimulatory reaction in the cicatrizing process. The stimulatory effects occur on typical cells, which are important to skin formation, such as fibroblast, cheratinocit and derma cells. Particular importance is seen in the functioning of the fibro-blast used in collagen production, which plays a fundamental role in the formation of fibrosis wounds together with other extracellular matrix components. There are two ways in which Aloe participates in the cicatrizing process. One is via the elevated molecular acemannan. The second is via the low-weighted and vegetable-based steroid anthraquinone. In this content, the acemannan stimulates the macrophage's activity by chemically signaled production that affects cellular proliferation. This is particularly true for the fibroblasts, which are also involved in the final wound-healing phase, favoring riepitelization. The acemannan molecules then inhibit development of various wound microorganisms, which include actions that are equally administered in other molecules. Various low-weighted molecular composts are in many ways involved within the cicatrizing mechanism. Some of these composts are capable of

stimulating the angiogenesis processes. These processes are necessary for tissue regeneration and revascularization. Other low-weighted molecular components, like Cinnamic and Crysophanic acid perform very important control functions on infectious wound processes. It is important to mention that the observation of the positive effects found on wounds is closely related to the use of fresh Aloe products. This is because certain treatments may alter various active molecules, resulting in the loss of potential herbal therapeutic benefits.

Surprising Immunomodulatory Properties

The interactional mechanism between elevated weighted molecular components holds an important role in numerous vital processes, intending to maintain the body's internal environ-mental integrity. Polysaccharides or glycoprotein-natured mole-cules are involved in such activities, particularly regarding the immune system. The defense mechanism's effectiveness against external elements is certainly tied to the proper functioning of the immune system. This is for both its absolute potentiality and when it is capable of responding according to the circumstance.

In various pre-pathologic or conclamate characterized pathologic situations, an individual's immune system may fluctuate from an initial functional alteration to a strong immunological reduction potential. This may cause serious pathological consequences. The acemannan performs the immu-nomodulatory properties in Aloe arborescens (similar to the glucans). The acemannan has a protective effect on organisms. Aloe contains the highest concentration of this vegetable-based molecule. Arborescens slightly varies in that it is a biologically more active form. Acemannan actively stimulates the lymphocytes response. The response reaction appears to be specific for the acemannan, as opposed to other polysaccharides and the effect is aimed at t-cell production and macrophage activity, creating strong interleukin production with strong immunogenic activities. These actions, which result in the modulation and strengthening of the immune system, are related to poly-saccharidic-natured molecules without peptic components. It is important to note that natural glycol-protein products such as lectin aloetina A & B from Aloe arborescens have been found in Aloe itself. These products seem to be involved in the strengthen-ing of the immune system, thus inhibiting "in vivo" attributes from the fibro sarcoma and other tumoral-cell growth.

Singular Hypoglycemic Properties

Numerous experimental and epidemiological observations of fresh Aloe leaves have shown a positive hypoglycemic effect in both patients with diabetes mellitus and insulin-dependent diabetics. This effect is attained by polysaccharide fractions of watery Aloe arborescens extracts. In particular, two acemannan fractions called

Erboran A & B have proven to be effective in achieving a severe glycemic reduction in both diabetic patients and rats. It is important to note that the administration of Aloe arborescens to diabetic patients allows for the healing of diabetic-associated ulcerations.

Possible Anti-Tumor Properties

Numerous articles based on the medical benefits of Aloe have and are continuing to scientifically demonstrate Aloe's therapeutic and anti-tumor potential. A vast but prudent bibliography demonstrating anti-tumor effects of various Aloe components on precancerous and cancerous in vitro cells and on real experimental animal neoplasis is now available. This action seems to be tied to the acemannan immune-stimulant properties and glycoprotein up to anthraquinone antiviral and citotoxic properties. It is also related to anthraquinone and phenolic antioxidant and free radical effects as well as antioxidant vitamins (beta-carotene, Vitamin C and tocopherols) ending with the role of oligoelements. Some examples of scientific literature on Aloe's phytotherapeutic (plant therapy) potentials are present in the following citation of specific bibliographic references.

- In laboratory experimentation on cancerous and pre-cancerous cells.
    - Research has been done on Aloe's anti-tumor activities. This research has been administered on cultured leukemic human and animal cells and in neuroectodermal cultured cells. The results were very encouraging, in that they demonstrated Aloe's intense cytotoxic inhibition activities in the development of the usual tumor cells.
    - Gribel, A. Pahinskii, K. 1986. Antimetastic properties of Aloe juice. Voposy onkologii, 32, (12), 38-40
    - Jeong-he-yun, et al. Anticancer effects of Aloe on sarcoma 180 in IRC mouse and on human cancer lines. Yakhak Hoechi. 38, (3), 311-321
    - Lee. K.H., Kim, J. H., D. S., Kim C. H., 2000. Anti-leukemia and anti-mutagenic effects of (2.ethylhexyl)phthalate isolated from Aloe vera Linne J. Pharm. Phatmacol, 52, 593598
    - Pecere, T., et al., 2000. Aloe-emodin is a new type of anticancer agent with selective activity against neuro-ectodermal tumors. Cancer Res. 60, 2800-2804
    - Winters, A. et al., 1981. Effects of Aloe on human normal and tumors cells in vitro. Econ. Bot. 35, 89-95

- Observations on antitumoral effects on experimental animals
    - Numerous publications have appeared with respect to Aloe's antitumoral and antimetasis effects on various types of animal-induced tumors. The results showed positive derivatives from Aloe supplementation when it achieves:
- the reduction in the heptacarcinogeneses (liver tumor) severity on rats;
- inhibition in tumor reduction with cancerogenous materials in rats;
- the arrest and regression of fibrosaracoma growth in cats;
- carcinogen inhibition on rat liver;
- the reduction of experimental subjects mortality who are infected with Norman sarcoma;
- phytotherapeutic effect on pleura rat tumors.

The outcome of these results derived from Aloe in 1991 has allowed American approved health officials to use acemannan in curing dog and cat fibrosaracoma where past cures were non-existent.

- Corsi, M.M., et al, 1998. The therapeutic potential of Aloe vera in tumor-bearing rats. Int. J. Tissue React. 20, 115-118 (c) Clinical Studies.
- Harris, C., Pierce, K., King, G., Yates, K.M., Hall, J., Tizzard, I., 1991. Efficacy of acemannan in treatment of canine and feline spontaneous neoplasms. Molecular Biotherapy 3, 207-213.
- Imanishi, K., Ishiguro, T., Saito, H., Suzuki, I., 1981. Pharmacological studies on plant lectin, Aloctin A. I Growth inhibition of mouse methyl-cholanthrene-induced fibrosarcoma (Meth A) in ascites form by Aloctin A. Experientia 37, 1186-1187
- Peng, S.Y., Norman, J., Curtin. G., Corrier, D., McDaniel, H.R., Busbee, D., 1991. Decreased mortalità of Norman murin sarcoma in mice treated with the immunomodu-lator, acemannan. Molecular Biotherapy 3, 79-87
- Prng, A., et al, USA 1991. Decrease in mouse mortality rates for Norman Sarcoma, treated with immuno-modulatory acemannan. Anatomy Department, Veterinary Medical School, University of Texas.

- Tsuda, H., Ito, M., Girono, I., Kawai, K., Beppu, H., Fujita, K., Nagao, M., 1993. Inhibitory effect of Aloe Arborescens Miller on induction of preneoplastic focal lesions in the rat liver. Phytotherapy Research 7, S43-S47

- Yagi, A., Makino, K., Nishioka, I., Kuchino, Y., 1977. Aloe mannan, polysaccharide from Aloe arborescens var. natalensis. Planta medica 31, 17-20

Epidemiologic studies in the diffusion of human lung tumors in subjects who smoke showed that the consumption of Aloe juice prevents lung carcinogensis and stomach and colon tumors.

- Inahata, K., Nakasugu, T. 1995. Mutagenesis inhibitors. Japanese Patent. JP 7053397.

- Pecere, T., et al. 2000. Aloe-emodin is a new type of anti-cancer agent with selective activity against neuro-ectodermal tumors. Cancer Res. 60, 2800-2804

- Sakai, R., 1989. Epidemiologic survey on lung cancer with respect to cigarette smoking and plant diet. Japanese Journal of Cancer Research 80, 513-520

Other important observations and testimonies on the therapeutic effects of Aloe on important subjects like neoplase, which represent the second cause of death in Italy, were published in specific scientific texts. These observations represent a valid aspect of this plant's use for anti-tumoral remedies, even if they have yet to be clinically or experimentally proven.

Father Romano Zago, OFM, 2003.

Di Cancro si può guarire (Cancer is curable).

Healthy Therapeutic Effects of Aloe Arborescens Found in Scientific Literature

Aloe's list of biological and herbal therapeutic properties is surprisingly extensive. Many misinformed people ask themselves how it is possible that this completely usable plant represents: the most potent natural non-intoxicating agents, the most effective immune system stimulator and regulator, a valid anti-inflammation agent, an analgesic, an antiseptic, a tissue-regenerate stimulator, a skin healer, an anti-intoxicant and anti-age remedy, and a skin protector. All of these factors have been biomedically experimented and proven. The attached biblio-graphy illustrates Aloe's diverse qualities. In addition, it can be said that each of the numerous natural molecules that are included in Aloe arborescens' rich collection have specific herbal therapeutic properties. These plant properties are high-lighted for their reciprocal synergic actions of both usable components and nutritional factors. These herbal therapeutic characteristics make Aloe a potent remedy for numerous severe and less severe pathologies that can include diverse organs and other parts of the organism.

Digestive System

Aloe arborescens' principal properties are capable of having healthy effects on the digestive system. Aloe is used in mouthwash or gel form to act as a mucous protector, lesion corrector, anti-inflammatory agent; it produces an antimicotic and antimicrobic effect, and it normalizes oral pH levels and fights halitosis.

Regarding the stomach, Aloe arborescens' enriched muco-polisaccharides allow for the development of: a) valid stomach mucous protection against gastric acids by inhibiting chloridic acid protection, b) wound healing properties that inhibit helicobacter pylori growth; and c) anti-inflammatory action with lenitive effects on gastritis and on the esophagus. Aloe's Colina, inositol, zinc and selenium contents help with hepatic insufficiencies by intervening in the hepatic cellular membrane fluid and in metabolic processes, thus resolving part of the body's functional difficulties. In particular, Aloe is an effective intestine control remedy for the following symptoms:

1. Lazy bowel and constipation, increasing intestinal peristalsis by using mucillagin and hemicelluloses actions;

2. Colitis and intestine-related pathologies. In this case, it is used as an anti-inflammatory, lenitive and wound healer;

3. Diarrhea: Aloe can resolve this intestinal malfunction because of its nutritional, anti-bacterial, antiseptic and anti-inflammatory components;

4. Fights dangerous flora bacterial settlement, but it's also effective against microorganisms as: salmonella, streptococci and staphylococci. It is used to fight against candida albicans intestinal mucous. The anthraquinone component is also sustained by the acemannan's immuno-stimulating effect. It is non-toxic to the body and maintains the entire digestive system effectively.

Integument System

Another effective therapeutic action by Aloe. It has been popular since antiquity and is used primarily for skin pathologies. Even in this case, Aloe is considered to be a multi-purpose plant, because its principal active ingredients are capable of resolving numerous skin conditions, such as acne, acne rosacea, pimples, dermatitis and eczema. Aloe arborescens offers a wide array of principal ingredients as well as benefits useful for metabolic functional conditions, infections and inflammations.

The use of Aloe arborescens' pure gel and other cosmetic products is important because it is capable of protecting the skin. Cosmetics with Aloe stimulate the blood flow, guaranteeing an improved level of beneficial activities and the capacity to eliminate Aloe prepared cosmetics toxins. The skin then appears elevated, hydrated and elastic, invigorating its antioxidant defense system to fight free radicals and degenerative actions on the epithelia. This produces an anti-aging and rejuvenating effect. Aloe's excellent capabilities to heal wounds can be used to speed the wound marginization process, sunburns, heat wounds, radiation and bruises.

Cardio-Circulatory System

Aloe arborescens can have a positive effect on this system. In addition to being an effective cleaner or toxin eliminator, the various Aloe components can determine the existence of Hemitrope process, thus resolving anemia. It can have a posi-tive effect on headaches, tiredness and muscular aches. Finally, Aloe's composition includes an elevated quantity of edible fiber, vitamins and polyunsaturated antioxidant components. Aloe is useful as a prevention technique and as a lipidic material depositor for arteries and as an aid to atheromatosis and arteriosclerosis processes. It is also used as a topical remedy and other forms that allow Aloe to effectively fight varicose veins and the loss of elasticity in the skin. In addition, Aloe's immunomodulatory, anti-inflammatory and analgesic actions are due to the acemannans, anthraquinones and vitamins that help fight against lunatics-associated inflammatory reactions.

Immune System

The immuno-stimulating and immunomodulating muco-polysaccharide agents, such as mannan, acemannans and glucans, found in Aloe arborescens make this plant the most important remedy for numerous immune system malfunctions.

Often, the use of Aloe may resolve the following pathologies:

Rheumatoid Arthritis

This pathology is characterized by severe inflammation. It causes severe functional and anatomic complications, antigen and antibody deposits, inflammation and pain. The prolonged use of Aloe arborescens-based products is effective in fighting the effects of this pathology.

Vaginal Candida

The disturbing itchiness caused by Candida albicans is effectively controlled by the topical use of Aloe-based products.

Herpes

This pathology is caused by a common infection. It appears when the immune system is under stress. Simple herpes and herpes zoster (St. Anthony's fire) are cured by using Aloe arborescens-based products because of their antibacterial, antiviral, anti-inflammatory and immunomodulatorial properties.

Chemotherapy-Related Weakening of the Body

Aloe arborescens' biological potential is also effective in relieving the debilitating effects of chemotherapy used to treat cancer. Immune system stimulation and proper functioning strengthen the body in regaining physical and psychological well being after chemotherapy-related aftereffects.

Psoriasis

A specific cure for psoriasis does not exist in medicine today. This pathology can be controlled by using Aloe arborescens as a topical treatment.

Respiratory System

Chronic or acute inflammatory manifestations commonly found in influenza and bacterial infections are effectively treated by Aloe arborescens. The use of this plant is effective in the following cases:

Laryngitis and Bronchitis

Pure Aloe-based inhalation can effectively fight against respiratory and bronchial infections. The acemannan makes this possible by activating the macrophage and lymphocytes immune defense against infection. The solution to this problem is also attained by vegetable sterol antiflogistic and lenitive actions.

Riniti and Tonsillitis

The germicidal actions of some anthraquinones prove to be a valid remedy for these issues.

In concluding this rapid presentation of the healthy and therapeutic uses of the

Aloe plant, it should be repeated that the versatility of this plant on numerous different pathologies afflicting the human body is endless. It is noted that, in general pharmaceutical preparation, only one pharmaceutical factor is capable in counteracting a specific pathology. This is not the case for Aloe. Aloe provides numerous herbal therapeutic factors that interact individually or together to positively counteract various pathologies. This can be seen in the following bibliographical pages.

Bibliography, including Specific International Journals

Acevedo-Duncan, M., Russell, C., Patel, S., Patel, R.: Aloe-emodin-modulates PKC isozymes, inhibits proliferation, and induces apoptosis in U-373MG glioma cella. International Immuno-pharmacology 4(14):1775-1784., 2004.

Afzal, M., Ali, M., Hassan, R.A.H., Sweedan, N., Dhami, M.S.I.: Identification of some prostanoids in Aloe vera extracts. Planta Medica 57, 38-40, 1991.

Ando, N., Yamaguchi, I.: Sitosterol from Aloe vera gel. Kenkyu Kiyo-Tokyo Kasei Daigaku 30, 1520, 1990.

Anton, R., Haag-Berrurier, M.: Therapeutic use of natural anthra-quinone for other than laxative actions. Pharmacology 20, 104-112, 1980.

Ashley, F.L, O'Loughlin, B.J., Peterson, R., Fernandez, L., Stein, H., Schwartz, A.N.: The use of Aloe vera in the treatment of thermal and irradiation burns in laboratory animals and humans. Plastic and Reconstructive Surgery 20, 383-396, 1957.

Avila, H., Rivero, J., Herrera, F., Fraile, G.: Cytotoxicity of a low molecular weight fraction from Aloe vera (Aloe barbadensis Miller) gel. Toxicon 35, 1423-1430, 1997.

Azghani, A.O., Williams, I., Holiday, D.B., Johnson, A.R.: A betalinked mannan inhibits adherence of Pseudomonas aeruginosa to human lung epithelial cells. Glycobiology 5, 39-44, 1995.

Basso, G., Diaspro, A., Salvato, B., Carli, M., Palu, G.: Aloe-emodin is a new type of anticancer agent with selective activity against neuroectodermal tumors. Cancer Research 60(11):2800-2804, 2000.

Beppu, H., Koitz, T., Shimpo, K., Chihara, T., Hoshino, M., Ida, C., Kuzuya, H.: Radical-scavenging effect of Aloe arborescens Miller on prevention of pancreatic islet B-cell destruction in rats. Journal of Ethnopharmacology, 89 (1):27-45, 2003.

Beppu, H., Shimpo, K., Chihara, T., Kaneko, T., Tamai, I., Yamaji, S., Ozaki, S., Kuzuya, H., Sonoda, S.: Fujita Memorial Nanakuri Institute, Fujita Health University, 1865 Isshiki-cho, Hisai, Mie 514-1296, Japan. Anti-diabetic effects of dietary administration of Aloe arborescens Miller components on multiple low-dose streptozotocin-induced diabetes in mice: investigation on hypoglycemic action and systemic absorption dynamics of aloe components. J Ethnopharmacol. 103(3):468-77, 2006 Feb 20.

Bland, J.: Effect of orally consumed Aloe vera juice on gastro-intestinal function in normal humans. Preventive Medicine 14, 152-154, 1985.

Blitz, J., Smith, J.W., Gerard, J.R.: Aloe vera gel in peptic ulcer therapy: preliminary report. Journal of the American Osteo-pathic Association 62, 731-735, 1963.

Bloomfield, F.: Miracle Plants: Aloe Vera. Century, London, 1985.

Brossat, J.Y., Ledeaut, J.Y., Ralamboranto, L., Rakotovao, L.H., Solar, S., Gueguen, A., Coulanges, P.: Immuno-stimulating properties of an extract isolated from Aloe vahombe. Archives Institut Pasteur Madagascar 48, 11-34, 1981.

Bruce, W.G.G.: Investigations of antibacterial activity in the Aloe. South African Medical Journal 41, 984, 1967.

Bruce, W.G.G.: Medicinal properties in the Aloe. Excelsa 57-68, 1975.

Capasso, F., Borrelli, F., Capasso, R., DiCarlo, G., Izzo, A.A., Pinto, L., Mascolo, N., Castaldo, S., Longo, R.: Aloe and its therapeutic use. Phytotherapy Research 12, S124-S127, 1998.

Cera, L.M., Heggers, J.P., Robson, M.C., Hagstrom, W.J.: The therapeutic efficacy of Aloe vera cream (Dermaide Aloe™) in thermal injuries. Two case reports. J. Am. Animal Hospital Assoc. 16, 768-772, 1980.

Coats, Bill C., R.Ph., C.C.N., with Ahola, Robert: Aloe Vera, the New Millennium, i Universe, 2003.

Danhof, Ivan E., M.D., Ph.D., (ND): The Fundamentals of Aloe Vera Mucopolysaccharides. Abstract: Dr. Danhof is regarded by many as the leading authority on the Aloe vera plant. This paper gives the fundamentals of how the polysaccharide molecules help the body in the healing process, 1994.

Danhof, Ivan E., M.D., Ph.D, (ND): Aloe Vera Leaf Handling and Constituent Variability; Remarkable Aloe – Aloe Through the Ages, Vol. 1, Omnimedicus Press, 1987.

Danhof, Ivan E, M.D., Ph.D.: Internal uses of Aloe vera. Abstract: Aloe used in intestinal disorders, atherosclerosis and coronary hearth disease, anti-cancer actions, immunity, 1988.

Danhof, Ivan E., M.D., Ph.D.: Aloe Vera, The Whole Leaf Advantage, 2000.

Davis, R.H.: Topical influence of Aloe vera on adjuvant arthritis, inflammation and wound healing. Physiologist 31, 206, 1988.

Davis, R.H., Agnew, P.S., Shapiro, E.: Anti-arthritic activity of anthraquinones found in Aloe for podiatric medicine. Journal of the American Podiatric Medical Association 76, 61-66, 1986.

Davis, R.H., Kabbani, J.M., Maro, N.P.: Wound healing and anti-inflammatory activity of Aloe vera. Proceedings of the Penn-sylvania Academy of Science 60, 79, 1986.

Davis, R.H., Leitner, M.G., Russo, J.: Topical anti-inflammatory activity of Aloe vera as measured by ear swelling. Journal of the American Podiatric Medical Association 77, 610-612, 1987.

Davis, R.H., Leitner, M.G., Russo, J.M., Byrne, M.E.: Anti-inflammatory activity of Aloe vera against a spectrum of irritants. Journal of the American Podiatric Medical Associ-ation 79, 263-276, 1989.

Davis, R.H., Maro, N.P.: Aloe vera and gibberellin. Anti-inflammatory activity in diabetes. Journal of the American Podiatric Medical Association 79, 24-26, 1989.

Davis, Robert H., Ph.D., Professour Emeritus of Physiology, Pennsylvania College of Podiatric Medicine: The Conductor-Orchestra Concept Of Aloe Vera, The Model For Aloe Vera.

Davis, Robert H., Ph.D.: Biological Activity of Aloe Vera.

Duke, J.A.: Aloe barbadensis Mill. (Liliaceae). CRC Handbook of Medicinal Herbs. CRC Press, Boca Raton, FL, pp. 31-32, 1985.

Egger, S., Brown, G.S., Kelsey, L.S., Yates, K.M., Rosenberg, L.J., Talmadge, J.E.: Hematopoietic augmentation by a beta-(1,4)-linked mannan. Cancer Immunology Immuno-therapy 43, 195-205, 1996.

Elkins, Rita, M.H.: Miracle Sugars, The Glyconutrient Link to Disease Prevention and Improved Health, Woodland Publish-ing, 2003

Finbar, Magee (Dr.): Health watch: Alternative path: Aloe, aloe what's all this then? The News Letter. Belfast, Northern Ireland. Abstract: Lists some of the benefits of Aloe and also some of the 75 plus nutritional substances. “What is also apparent is that the plant itself is better than the sum of the individual components. In some way the synergistic balance out performs isolated components.” (2002, November 6).

Frumkin, A.: Aloe vera, salicylic acid and aspirin for burns. Plastic and Reconstructive Surgery 83, 196, 1989.

Fujita, K., Ito, S., Teradaira, R., Beppu, H.: Properties of a carbo-xypeptidase from Aloe. Biochemical Pharmacology 28, 1261-1262, 1979.

Fujita, K., Yamada, Y., Azuma, K., Hirozawa, S.: Effect of leaf extracts of Aloe arborescens Mill subsp. natalensis Berger on growth of Trichophyton entagrophytes. Anti-microbial Agents and Chemotherapy 35, 132-136, 1978.

Furukawa, F., Nishikawa, A., Chihara, T., Shimpo, K., Beppu, H., Kuzuya, H., Lee, I.S., Hirosr, M.: Chemopreventive effects of Aloe arborescens on N-nitrosobis(2-oxopropyl) amine-induced pancreatic carcinogenesis in hamsters. Cancer Letters 178(2): 117-122, 2002.

Gardiner, T.: "Biological Activity of eight known dietary mono-saccharides required for glycoprotein synthesis and cellular recognition processes: summary," Glyco Science & Nutrition 1(13):1-4, 2000.

Gauntt, C., et al.: Aloe polymannose enhances anti-coxsackievirus antibody titres in mice, Phytotherapy Research, 14(4):261-6, 2000 June.

Gowda, D.C., Neelisiddaiah, B., Anjaneyalu, Y.V.: Structural studies of polysaccharides from Aloe vera. Carbohydrate Research 72, 201-205, 1979.

Grindlay, D., Reynolds, T.: The Aloe vera phenomenon: a review of the properties and modern uses of the leaf parenchyma gel. Journal of Ethnopharmacology 16, 117-151, 1986.

Haq, Q.N., Hannan, A.: Studies on glucogalactomannan from the leaves of Aloe vera, Tourn. (ex Linn.). Bangladesh Journal of Scientific and Industrial Research 16, 68-72, 1981.

Heggers, J.P., Kucukcelibi, A., Listengarten, D., Stabenau, C.J., Ko, F., Broemeling, L.D., Robson, M.C., Winters, W.D.: Beneficial effect of Aloe on wound healing in an excisional wound model. Journal of Alternative and Complementary Medicine 2, 271-277, 1996.

Heggers, J.P., Pelley, R.P., Robson, M.C.: Beneficial effects of Aloe in wound healing. Phytotherapy Research 7, S48-S52, 1993.

Hiroko, Saito: Aloe's Effectiveness as an Anti-Inflammatory Agent, Department Of Pharmacy, Aichi Cancer Center, 1993

Hu, Y., Xu, J., Hu, Q.: Evaluation of antioxidant potential of aloe vera (Aloe barbadensis Miller) extracts. Journal of Agricultural and Food Chemistry 51(26):7788-7791, 2003.

Hutter, J.A., Salman, M., Stavinoha, W.B., Satsangi, N., Williams, R.F., Streeper, R.T., Weintraub, S.T.: Anti-inflammatory glucosyl chromone from Aloe barbadensis. Journal of Natural Products 59, 541-543, 1996.

Imanishi, K.: Aloctin A, an active substance of Aloe Arborescens Miller as an immunomodulator. Phytotherapy Research 7, S20-S22, 1993.

Jamieson, G.I.: Aloe vera (Aloe barbadensis Mill.). Queensland Agricultural Journal 110, 220, 1984.

Kinoshita, K., Koyama, K., Takahashi, K., Noguchi, Y., Amano, M.: Steroid glucosides from Aloe barbadensis. Journal of Japanese Botany 71, 83-86, 1996.

Kodym, A.: The main chemical components contained in fresh leaves and in a dry extract from three years old Aloe arborescens Mill. grown in hothouses. Pharmazie 46, 217-219, 1991.

Kodym, A., Marcinkowski, A., Kukula, H., Department of Drug Form Technology, Ludwik Rydygier Medical University in Bydgoszcz: Technology of eye drops containing aloe (Aloe arborescens Mill.—Liliaceae) and eye drops containing both aloe and neomycin sulphate. Acta Poloniae Pharmaceutics. 60(1):31-9, 2003 Jan-Feb.

Koike, T., Beppu, H., Kuzuya, H., Maruta, K., Shimpo, K., Suzuki, M., Titani, K., Fujita, K.: A 35 kDa mannose-binding lectin with hemag-glutinating and mitogenic activities from 'Kidachi Aloe' (Aloe arborescens Miller var. natalensis Berger). Journal of Biochemistry 118, 1205-1210, 1995.

Koo, M.: Aloe vera: anticancer and antidiabetic effects. Phytother Res 8:461-4, 1994.

Kuo, P.L., Lin, T.C., Lin, C.C.: The antiproliferative activity of aloe-emodin is through p53-dependent and p21-dependent apoptotic pathway in human hepatoma cell lines. Life Sciences 71(16): 1879-1892, 2002.

Lee, K.H., Hong, H.S., Lee, C.H., Kim, G.A.: Induction of apoptosis in human leukaemic cell lines K562, HL 60 and U9337 by diethylhexylphthlatate isolated from Aloe vera Linne. Journal of Pharmacy and Pharmacology 52(8):1037-1041, 2000.

Lee, K.H., KIim, J.H., Liu, D.S., Kim, C.H.: Anti-leukaemic and anti-mutagenic effects of di(2-ethylhexyl)phthalate isolated from Aloe vera Linne. Journal of Pharmacy and Pharmacology 52(5):593-598, 2000.

Lee, M.J., Yoon, S.H., Lee, S.K., Chung, M.H., Park, Y.I., Sung, C.K., Choi, J.S., Kim, K.W.: In vivo angiogenic activity of dichloromethane extracts of Aloe vera gel. Archives of Pharmacological Research. 18, 332-335, 1995.

Lefkowitz, D., et al.: "Effects of a glyconutrient on macrophage functions," International Journal of Immunopharmacology 22(4):299-308, 2000 Apr.

Leung, M.Y., Liu, C., Zhu, L.F., Hui, Y.Z., Yu, B., Fung, K.P.: Chemical and biological characterization of a polysaccharide biological response modifier from Aloe vera L. Glycobiology 14(6):501-5 10, 2004.

Lian, L.H., Park, E.J., Piao, H.S., Zhao, Y.Z., Soho, D.H.: Aloe-emodin-induced apoptosis in t-HSC/CI-6 cells involves a mitochondria-mediated pathway. Basic and Clinical Pharma-cology and Toxicology 96(6):495-502, 2005.

Lin, J.G., Chen, G.W., Li, T.M., Chouh, S.T., Tan, T.W., Chung, J.G.: Aloe-emodin induces apoptosis in T24 human bladder cancer cells through the p53-dependent apoptotic pathway. Journal of Urology 175(1):343-347, 2006.

Lindblad, W.J., Thul, J.: Sustained increase in collagen biosyn-thesis in acemannan impregnated PVA implants in the rat. Wound Repair and Regeneration 2, 84, 1994.

Liu, Y., Yang, H., Takatsuki, H., Sakanishi, A.: Effect of ultrasonic exposure of Ca++ -ATPase activity in plasma membrane from Aloe arborescens callus cells. Ultrasonic Sonochemistry 13(3):232-236, 2006.

Lorenzetti, L.J., Salisbury, R., Beal, J.L., Baldwin, J.N.: Bacterio-static properties of Aloe vera. Journal of Pharmaceutical Science 53, 1287, 1964.

Marshall, G.D., Druck, J.P.: In vitro stimulation of NK activity by acemannan. Journal of Immunology 150, 241A, 1993.

McDaniel. H.R., Pulse, T.: Predition and Results Obtained Using Oral Acemannan in 41 Symptomatic HIV Patients. IV Inter-national Conference on Aids, Stockholm, Sweden, June 12-16, 1988.

McDaniel, H. Reg., M.D.: Cancer, Is There A Role for Dietary Supplementation in Combination with Standard Cancer Therapy. Comprehensive Cancer Conference 2000, The Center for Mind-Body Medicine Washington, DC June 9-11, 2000 Sponsors: The

University of Texas-Houston Medical School, The National Cancer Institute, The National Center for Complementary and Alternative Medicine, 2000.

McDaniel, H. Reg., M.D.: The Micronutrient Best Case Cancer Series: A Compendium of Medical Presentations Made at Cancer Conferences Between 2000 and 2004 documenting that the Quality of Life and Response to Standard Treatment Protocols for Malignancy Improved with Dietary Supple-mentation. These conferences included: The Comprehensive Cancer 2003 Conference held in Washington, D.C. and sponsored by the Center for Mind Body Medicine, National Cancer Institute, National Center for Complementary and Alternative Medicine of the National Institutes of Health, First International Conference for Integrative Oncology held in New York City, NY, in November 2004 and sponsored by the National Center for Complementary and Alternative Medicine of the National Institutes of Health and the Society for Integrative Oncology, 2000-2004.

McDaniel, H. Reg., M.D.: Hepatitis General Antiviral Activity is Supported by Glyconutrient Dietary Supplementation. Hepa-titis Conference 2000 Miami Beach, Florida, June 3-4, 2000.

McDaniel, H. Reg., M.D.: AIDS Patient Responses Validate in Vitro Experiments Indicating Micronutrient Dietary Supple-mentation (DS) Supports Innate Antiviral Mechanisms and Restores Immune Function. 9th World Congress on Clinical Nutrition, The University of Westminster, London, England, June 24-26, 2002.

McDaniel, H. Reg., M.D.: The Molecular Biology of How Dietary Supplements Support Optimal Human Health, 2005.

McDaniel, H. Reg., M.D.: Lymphocyte Levels in Acemannan Treated HIV-1 Infected Long-Term Survivors, Abstract # PO-B29-2179, IXth International Conf. on AIDS, Berlin, 1993.

McDaniel, H. Reg., M.D.: The Source of the Master Glyconutrient.

Merzlyak, M., Solovchenko, A., Pogosyan, S.: Department of Physiology of Microorganisms, Faculty of Biology, Moscow State University, 1 19992, GSP-2, Moscow, Russia. mnm@6. Celllmm.bio.msu.ru Optical properties of rhodoxanthin accu-mulated in Aloe arborescens Mill. Leaves under highlight stress with special reference to its photoprotective function. Photochemical & Photobiological Sciences. 4(4):333-40, 2005 Apr.

Morita, H.; Mizuuchi, Y.; Abe, T.; Kohno, T.; Noguchi, H.; Abe, I.: Institution Mitsubishi Kagaku Institute of Life Sciences (MITILS). Cloning and functional analysis of novel aldo-keto reductase from Aloe arborescens. Biological 8, Pharmaceuti-cal Bulletin. 30 (12):2262-7, 2007 Dec.

Norikura, T., Kennedt, D.O., Nyarko, A.K., Kojima, A., Matsui, I.: Protective effect of aloe extract against the cytotoxicity of 1,4-naphthoquinone in isolated rat hepatocytes involves modulation in cellular thiol levels. Pharmacology & Toxicology 90(5):278-284, 2002.

Obata, M., Ito, S., Beppu, H., Fujita, K., Nagatsu, T.: Mechanism of anti-inflammatory and antithermal burn action of Aloe arborescens Miller var. Natalensis Berger. Phytotherapy Research 7, s30-s33, 1993.

Parish, Christopher R.: Innate Immune Mechanisms: Nonself Recognition, Australian National University, Canberra, Australia, July 1999.

Pecere, T., Gazzolz, M.V., Mucignat, C., Paralin, C., Vecchia, F. D., Cavaggioni, A., Pierce, R.F.: Comparison between the nutritional contents of the Aloe gel from conventionally and hydroponically grown plants. Erde International 1, 37-38, 1983.

Pecere, T., Gazzolz, M.V., Mucignat, C., Paralin, C., Vecchia, F. D., Cavaggioni, A., Basso, G., Diaspro, A., Salvato, B., Carli, M., Palu, G.: Aloe-emodin is a new type of anticancer agent with selective activity against neuroectodermal tumors. Cancer research 60 (11):2800-2804, 2000.

Peuser, Michael: Capillaries Determine Our Fate/Aloe Empress of the Medical Plants, by St. Hubertus Produtos Naturals Ltda. Brazil: 91-101, 2003.

Pittman, J.C.: Immune-Enhancing Effects of Aloe, Health Con-scious, 13(1) 28-30, 1992.

Plaskett, Lawrance G. (BA, PhD, CChem, FRIC): Aloe vera and the human immune system. *Aloe Vera Information Services* (newsletter). Camelford, Cornwall, UK: Biomedical Informa-tion Services Ltd. Abstract: Specialized molecules in Aloe vera whole leaf extract interact with some special "receptor" substances that are embedded into the outer membrane of our immune system cells. The result is that the immune system cells are galvanized into action. In particular, the class of cells known as “phagocytes” increase the activities by which they attack and then engulf bacteria, waste products and debris. This increase in scavenging activities cleanses and protects the body, with knock-on benefits for a whole cascade of different medical conditions. The literature indicates that a common mechanism in this respect

probably exists in both humans and animals and that both can benefit enor-mously from the use of Aloe vera, 1996, April.

Plaskett, Lawrance G. (BA, PhD, CChem, FRIC): Aloe vera and cancer. Aloe Vera Information Services (newsletter). Camel-ford, Cornwall, UK: Biomedical Information Services Ltd., 1996, September.

Plaskett, Lawrance, BA, PhD, CChem, FRIC: Aloe Vera, Aloe In Alternative Medicine Practice.

Plaskett, Lawrance G. (BA, PhD, CChem, FRIC): The healing properties of Aloe. *Aloe Vera Information Services* (newsletter). Camelford, Cornwall, UK: Biomedical Information Services Ltd., 1996, July.

Pugh, N., Ross, S.A., El Sohly, M.A., Pasca, D.S.: Characteri-zation of *Aloeride, a new high-molecular weight poly-saccharide from Aloe vera with potent immuno-stimulatory activity. Journal of Agricultural and Food Chemistry 49(2): 1030- 1034, 2001.

Pulse, T.L. (MD), & Uhlig, Elizabeth (RRA): A significant improvement in a clinical pilot study utilizing nutritional supplements, essential fatty acids and stabilized Aloe vera juice in 29 HIV seropositive, ARC and AIDS patients. Journal of Advancement in Medicine, 3(4), 1990, Winter.

Qiu, Z., Jones, K., Wylie, M., Jia, G., Orndoref, S.: Modified Aloe barbadensis polysaccharide with immuno-regulating activity. Planta Medica 66(2): 152-156, 2000.

Reynolds, T., Dweck, A. C.: Aloe vera leaf gel: a review update. Journal of Ethnopharmacology. 68, 3-37, 1999.

Ross, S.A., El Sohly, M.A., Wilkins, S.P.: Quantitative analysis of Aloe vera mucilagenous polysaccharides in commercial Aloe vera products. Journal of AOAC International 80, 455-457, 1997.

Rubel, B.L.: Possible mechanisms of the healing actions of Aloe gel. Cosmetics and Toiletries 98, 109-114, 1983.

Sabeh, F., Wright, T., Norton, S.J.: Isozymes of superoxide dismutase from Aloe vera. Enzyme Protein 49, 212-221, 1996.

Saito, H.: Purification of active substances of Aloe arborescens Miller and their biological and pharmacological activity. Phytotherapy Research 7, S14-S19, 1993.

Sampedro, M.C., Artola, R.L., Murature, M., Murature, D., Ditamo, Y., Roth, G.A., Kivatinitz, S.: Mannan from Aloe saponaria inhibits tumoral cell activation and proliferation. International Immuno-pharmacology 4(3):4 1 l-4 l8, 2004.

Saoo, K., Miki, H., Ohmori, M., Winters, W.D.: Antiviral activity of Aloe extracts against cytomegalovirus. Phytotherapy Research 10, 348-350, 1996.

Schechter, S.R.: Aloe vera: the healing plant. Health Foods Business, 23-24, 1994.

Shelton, R.M.: Aloe vera: Its chemical and therapeutic proper-ties. International Journal of Dermatology 30, 679-683, 1991.

Shida, T., Yagi, A., Nishimura, H., Nishioka, I.: Effect of Aloe extract on peripheral phagocytosis in adult bronchial asthma. Planta medica 51, 273-275, 1985.

Shimpo, K., Beppu, H., Chihara, T., Kaneko, T., Shinzato, M., Sonoda, S.: Fujita Memorial Nanakuri Institute, Fujita Health University, Tsu, 1865 Isshiki-cho, Hisai Mie 514-l296 Japan. Effects of Aloe arborescens ingestion on azoxymethane-induced intestinal carcinogenesis and hematological and bio-chemical parameters of male F344 rats. Asian Pacific Journal of Cancer Prevention: Apjcp. 7(4):585-90, 2006 Oct-Dec.

Shimpo, K., Chihara, T., Beppu, H., Ida, C., Kaneko, T., Nagatsu, T., Kuzuya, H.: Inhibition of azoxymethane-induced aberrant crypt foci formation in rat colorectum by whole leaf Aloe arborescens Miller, var. natalensis Berger. Phytotherapy Research 15(8):705-711, 2001.

Shimpo, K., Ida, C., Chihara, T., Beppu, H., Kaneko, T., Kuzuya, H.: Aloe arborescens extract inhibits TPA-induced ear oedema, putrescine increase and tumour promotion in mouse skin. Phytotherapy Research 16(5):491-493, 2002.

Shimpo, K., Chihara, T., Beppu, H., Ida, C., Kaneko, T., Hoshino, M., Kuzuya, H.: Inhibition of azoxymethane-induced DNA adduct formation by Aloe arborescens var. natalensis. Asian Pacific Journal of Cancer Prevention 4(3):247-251, 2003.

Siegel, Dr. R., M.D.: Aloe, Immunity and Health CareScience papers presented to the Annual International Environmental Conference, 1998.

Siegel, Dr. R., M.D.: The Science of Immunity/ The Regulation of Immunity

Siegel, Dr. R., M.D.: Natural Plant Molecules

Soeda, M., Otomo, M., Ome, M., Kawashima, K.: Studies on antibacterial and anti-fungal activity of Cape Aloe. Nippon Saikingaku Zasshi 21, 609-614, 1966.

Stuart, R.W., Lefkowitz, D.L., Lincoln, J.A., Howard, K., Gelder-man, M.P., Lefkowitz, S.S.: Upregulation of phagocytosis and candicidal activity of macrophages exposed to the immuno-stimulant, acemannan. International Journal of Immuno-pharmacology 19, 75-82, 1997.

Sydiskis, R.J., Owen, D.G., Lohr, J.L., Rosler, K.H., Blomster, R.N.: Inactivation of enveloped viruses by anthraquinones extracted from plants. Antimicrobial Agents and Chemo-therapy 35, 2463-2466, 1991.

Syed, T.A., Ahmad, A., Holt, A.H., Ahmad, S.A., Ahmad, S.H., Afzal, M.: Management of psoriasis with Aloe vera extract in a hydrophilic cream: a placebo-controlled, double blind study. Tropical Medicine and International Health 1, 505-509, 1996.

T'Hart, L.A., Nibbering, P.H., van den Barselaar, M.T., van Dijk, H., van den Berg, A.J., Labadie, R.P.: Effects of low molecular constituents from Aloe vera gel on oxidative metabolism and cytotoxic and bactericidal activities of human neutrophils. International Journal for Immunophar-macology 12, 427-434, 1990.

T'Hart, L.A., van den Berg, A. J. J., Kuis, L., van Dijk, H., Labadie, R.P.: An anticomplementary polysaccharide with immuno-logical adjuvant activity from the leaf parenchyma gel of Aloe vera. Planta Medica 55, 509-512, 1989.

T'Hart, L.A., van Enckevort, P.H., van Dijk, H., Zaat, R., de Silva, K.T.D., Labadie, R.P.: Two functionally and chemically distinct immunomodulatory compounds in the gel of Aloe vera. Journal of Ethnopharmacology 23, 61-71, 1988.

Tanaka, M., Misawa, E., Ito, Y., Habara, N., Nomaguchi, K., Yamada, M., Toida, T., Hayasawa, H., Takase, M., Inagaki, M., Higuchi, R., Biochemical Research Laboratory, Morinaga Milk Industry Co., Ltd, Kanagawa, Japan: Identification of five phytosterols from Aloe vera gel as anti-diabetic com-pounds. Biological 8, Pharmaceutical Bulletin. 29(7):1418-22, 2006 Jul.

Teradaira, R., Shinzato, M., Beppu, H., Fujita, K.: Antigastric ulcer effects of Aloe arborescens Mill. var. natalensis Berger. Phyto-therapy Research 7, S34-S36, 1993.

Tizard, I., Carpenter, R.H., Kemp, M.: Immunoregulatory effects of a cytokine release enhancer (Acemannan). International Congress of Phytotherapy, 1991, Seoul, Korea, 68, 1991.

Tizard Ian R., BVMS, PhD, Carpenter Robert H., DVM, MS, McAnalley Bill H., PhD and Kemp Maurice C.: The biological activities of mannans and related complex carbohydrates. Department of Veterinary Microbiology and Parasitology, College of

Veterinary Medicine. Texas A&M University, College Station, TX, and Carrington Laboratories, Inc. Irving, TX, USA August 21, 1989.

Wang, Z.W., Zhopu, J.M., Huang, Z.S., Yang, A.P., Liu, Z.L., Xia, Y.F., Zeng, Y.X., Zhu, X.F.: Aloe polysaccharide mediated radio-protective effect through the inhibition of apoptosis. Journal of Radiation Research (Tokyo) 45(3):447-454, 2004.

Wasserman, L., Avigad, S., Berry, E., Nordenberg, J., Fenig, E.: The effect of aloe-emodin on the proliferation of a new merkel carcinoma cell line. American Journal of Dermato-pathology 24(1): 17-22, 2002.

Wickline, M.M.: Prevention and treatment of acute radiation dermatitis: a literature review. Oncology Nursing Forum 3 1(2):237-247, 2004.

Willner, Robert E., M.D., Ph.D.: Whole Leaf Aloe Vera: The Cancer Solution, Peltec Publishing Co., Inc., 1994.

Winters, Wendell D.: Aloe Medicinal Substances Present And Future Potentials, Associate Professor of Microbiology Director, Phytobiology Studies Program, University of Texas Health Science Center, Polypeptides of Aloe barbadensis Miller., Phytotherapy Research, February, 2006.

Wozniewski, T., Blaschek, W., Franz, G.: Isolation and structure analysis of a glucomannan from the leaves of Aloe arborescens var. Miller. Carbohydrate Research 198, 387-391, 1990.

Yagi, A., Harada, N., Shimomura, K., Nishioka, I.: Bradykinin-degrading glycoprotein in Aloe arborescens var. natalensis. Planta Medica 53, 19-21, 1987.

Yagi, A., Harada, N., Yamada, H., Iwadare, S., Nishioka, I.: Anti-bradykinin active material in Aloe saponaria. Journal of Pharmaceutical Sciences 71, 1172-1174, 1982.

Yagi, A., Shida, T., Nishimura, H.: Effect of amino acids in Aloe extract on phagocytosis by peripheral neutrophil in adult bronchial asthma. Japanese Journal of Allergology 36, 1094-1101, 1987.

Yamamoto, M., Masui, T., Sugiyama, K., Yokota, M., Nakagomi, K., Nakazawa, H.: Anti-inflammatory active constituents of Aloe arborescens Miller. Agricultural and Biological Chemistry 55, 1627-1629, 1991.

Alphabetical Index

