

ALOE ARBORESCENS *why?*





ALOE ARBORESCENS

why?



VONDERWEID
Prodotti Naturali per il Benessere

Azienda Agricola Il Pucino
www.aloearborescensinfo.com
email: info@aloe-arborescens.it
tel/fax 040 8992426



INDEX

Once upon a time	6
Aloe Arborescens	9
The Aloe plant.	11
Aloe Barbadensis Miller	12
Aloe Arborescens Miller	12
The chemical composition of the Aloe Arborescens	13
The carbohydrates of the Aloe Arborescens	15
The molecules of antrachinonique nature	17
The phenolic composts.	18
The salicylic acid	19
Other components	19
Nutrients in Aloe	19
Mineral salts	20
Vitamins	24
Proteins	27
Biological and phytoterapic caratteristichs.	30
Salutistic and phytoterapic effects of the Aloe Arborescens Noted in scientific literatures	42
Il Pucino Farm	49
Testimonies	55
Bibliography.	58



FOREWORD

The reason that drove me to publish this monograph is gratitude to this type of plant that gave me so much in every meaning, and the desire to clarify a bit more about a current topic which many people talk about, sometimes inappropriately.

The commercial boost that in the last years helped the Aloe plant to become famous was based on its own very substance by comparing diapers enriched with Aloe Vera dehydrated gel powder or Aloe drinks by some U.S. multinationals with Aloe Arborescens fresh organic products that have nothing in common with them.

Moreover, FDA doesn't allow the presence of Aloin substances in any product with Aloe to be commercialized in the United States. This fact reduces the plant anthraquinonic constituent which performs a very important role in balancing plant active elements.

After seven years from the start of this adventure that allowed me to achieve the biggest open field of Aloe Arborescens in Italy, I feel obliged to remember all the hard work done and to present to the public a retrospective story about this plant.

The occasion for the fulfilment of this task has been offered to me by Doctor Floridi who gave me a very comprehensive study about the Aloe Arborescens that constitutes the core of this book.

Maurizio de Vonderweid



Once upon a time...

The Aloe Arborescens plant which originated in South Africa but is common in the Equatorial belt, can be considered the “poor” cousin of the better known Aloe Vera. This is primarily due to its slower growth and development, and the smaller quantity of gel in its leaves. Hence Aloe Arborescens has never been commercially manufactured nor utilised in the United States, as with the Aloe Vera.

The Aloe Arborescens’ properties of resistance, concentration and adaptability has allowed its natural development in many places of the world (such as) where it has been used by the poorest people, therefore becoming an important reference to the popular medicine.

It remained little known and used in only some cultural alternative therapies until the 1990’s when Father Romano Zago, an Brazilian priest of Italian origins, found an old Brazilian recipe. The recipe used the entire leaf of Aloe Arborescens grounded and mixed with honey and a grain distillate. After sharing it with people in his local community with positive results, he begun to share his findings through interviews and conferences that culminated with a book which stated emphatically that cancer can be cured.

The recipe is different from others as it:

- uses Aloe Arborescens which is morphologically drier and more concentrated in its active ingredients than the Aloe Vera
- uses the whole leaf
- prepared fresh

To better understand the reasoning behind using the whole leaf, it must be understood that the Aloe leaf is gelatinous, mainly made of polysaccharides, and commonly used by industry to prepare drinks and cosmetics. Surrounding the gelatinous substance is a layer that secretes a



yellow sap (anthrachinonic component) which in turn is surrounded by another layer of "cuticle", an isolating substance full of fibers.

The anthraquinonic part of the plant is known for its laxative effect and, because of this, has been historically published by the "pharmacopeia" which is a book containing directions for the identification of samples and the preparation of compound medicines, and published by the authority of a government or a medical or pharmaceutical society. Currently, this part is also utilized in the making of famous tonic liquors due to its bitterness.

Lesser known properties of this part of the plant are that it is anti-microbial, anti-fungal, anti-viral and anti-inflammatory. These substances induce a high reproductive activity on cytotoxic T-Lymphocytes cells and on Natural Killer Cells.

However in the preparation of Father Zago's recipe, some important substances, left in the leaf itself, decay fairly quickly and cannot be easily stabilised therefore preventing the product being commercially viable on a large scale due to this instability and very limited shelf life.







Aloe Arborescens

A CONCENTRATE FULL OF ACTIVE INGREDIENTS

USEFUL FOR YOUR BODY

SCIENTIFIC INFORMATION MONOGRAPHY

edited by:

AZIENDA AGRICOLA IL PUCINO

in collaboration with **CRABION**

Biochemical and Nutritional Studies and Research Centre

of Doctor Alessandro Floridi

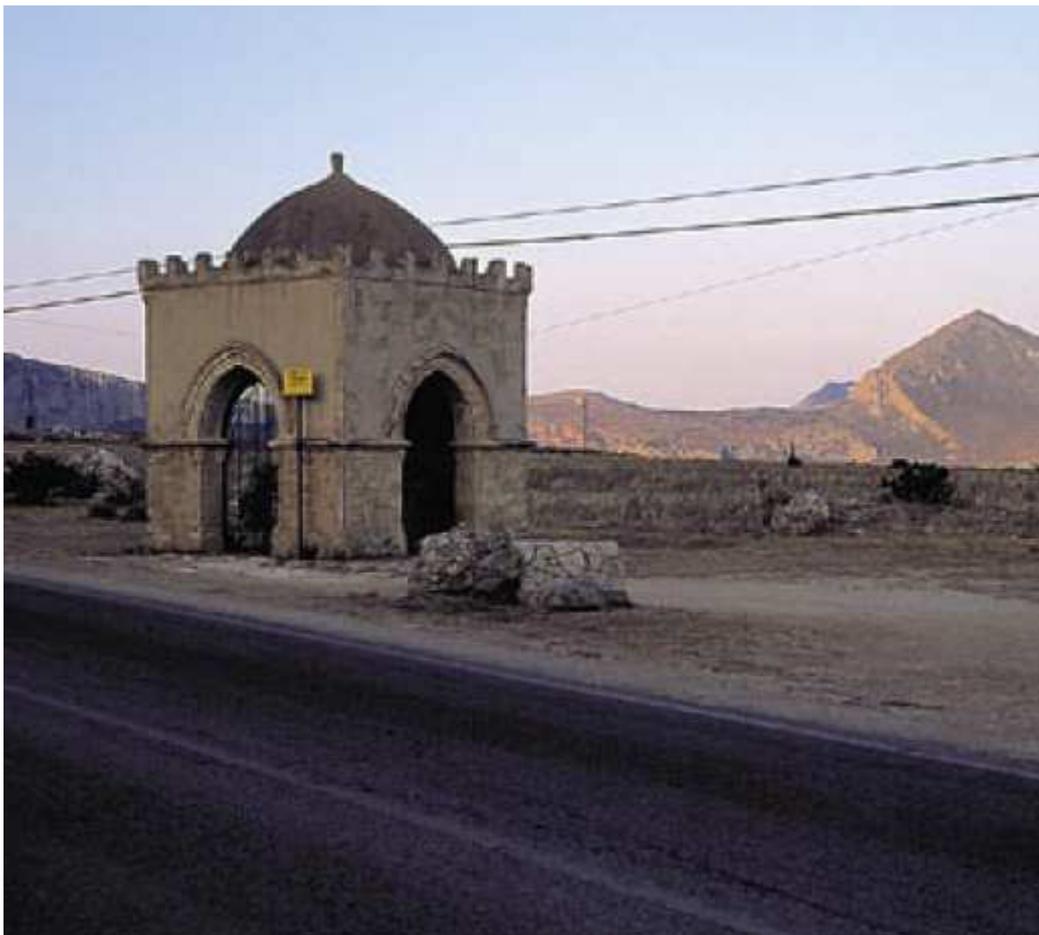




THE ALOE PLANT

Aloe is classified in the Liliaceae Family and the family of Aloaceae which includes a large variety of succulent and evergreen plants; about 350 species all over the world. They mainly grow flowers of elongated shape with a colour tone that varies from orange to scarlet red.

Every plant of the many species differs in some way from each other especially by the shape of the trunk and the sizes of the leaves. There are many different leaves dimensions: from tiny to very large. This type is commonly utilized in the field of food, herbal medicine and cosmetics. Among all of the Aloe varieties, Aloe Barbadosis Miller (*Aloe Vera*) and Aloe Arborescens Miller are the most typical and commonly known.



ALOE BARBADENSES MILLER (*Aloe Vera*)

This is an everlasting plant with light green fat succulent leaves. The middle of the leaves is richer in gel than the external edges and is where the Acemannan is found which has several immunomodulation and some anti-inflammatory properties, highly relevant for the phytotherapy.

Aloin, contained in the plant itself, belongs to the family of Anthraquinonics, which has laxative as well as draining and cleansing properties. At the moment Aloe Vera is the most commonly known plant of its species for its medical characteristics. This is not due to there being a large quantity of the active ingredients especially when compared with the other varieties, but rather are the result of the high gel output of its large leaves which allows processing ease in the extraction of the pulp. This pulp can be consumed as a beverage or be used as an external gel. Actually, the Aloe Vera leaf also has some phytotherapeutic properties, but it is not in the same quantities as found in the smaller Aloe Arborescens leaf.

ALOE ARBORESCENS MILLER

Compared to Aloe Vera, the Aloe Arborescens plant has tighter and more threadlike leaves with a wider outer circle that allows it to be resistant to harsh environmental conditions.

This morphological peculiarity, compared to Aloe Vera, has a major impact on its anthraquinonic properties which are responsible not only for its laxative properties, but also for its antiviral and antimicrobial ones.

In comparison to the Aloe Vera, the gel content in the Aloe Arborescens leaves is proportionally a lot less. This characteristic is less advantageous for commercial use (minor profit versus costs). For this reason the Aloe Arborescens had limited use although its phytotherapeutic properties has been proven to be superior to those of Aloe Vera (refer to bibliography).

In Italy, the plantation of this variety of Aloe is developing at a fast pace; in particular the farm of "Il Pucino". This plantation is morally justified for the well being and health needs of the world.



In Italy, the availability of this Aloe variety authorizes the commercialization of products containing fresh raw material; it allows to obtain Aloe Arborescens-based products that can retain all the biochemical-nutritional and phytotherapeutic features of the plant, both in the Aloe-based cosmetics products and in the other well-known healthy edible preparation, derived from the Brazilian Father Romano Zago's original recipe.

At the moment in Italy, all the imported dried Aloe Vera comes mostly from outside of Europe. To import this plant, it is necessary to stabilize the leaves by using a hot industrial method which reduces the nutrient and phytotherapeutic quality of the product compared to ours at “Il Pucino” farm.

This is the reason why it is hard to find a product with similar nutritional and phytotherapeutic qualities as the plants farmed in Italy.

Beyond this , the Aloe plant shows a fairly stable distribution of active ingredients among its several varieties. The most specific and mainly representative of these are related and briefly described in the following pages for their chemical, biochemical-nutritional and phytotherapeutic properties.

THE CHEMICAL COMPOSITION OF ALOE ARBORESCENS

Despite a previous lack of information on its chemical composition, Aloe has been used for centuries as a phytotherapeutic remedy or a base for cosmetics, which has created a great interest in the plant among the local people and their medicine.

After many positive testimonies in its use over the years, from the 1940s onwards, commenced a systematic analytic research into its properties.





This research has been able to clearly determine (in quantity and quality) all the different biochemical-nutritional, molecular, and physical-chemical features of Aloe Vera and Aloe Arborescens plants.

Since then and currently, the research on this plant has increased immensely with the idea of finally clarifying the complex compositions properties of this plant.

The current research is intended to establish the individual biological properties of each individual group of molecules that compose the complex and numerous parts present in this exceptional plant, and to increase knowledge of the Aloe's chemical composition.

The results show that the Aloe Arborescens contains several important components that can be included in the following three main groups: a) carbohydrates, among which the Acemannan polysaccharides and the Glucan polysaccharides have immunomodulation properties; b) antrichinonics and phenolics substances, present in the cuticle of the leaf, that have a laxative and cleansing action and is also anti-inflammatory, analgesic and antimicrobial; and c) the important nutritional and functional molecules such as mineral salts, vitamins amino acids, organic acids, lipids (polyunsaturated fats) and enzymes.



The average composition of the chemical components of the Aloe Arborescens plant, for each 100g of dried product, contains a value of 7% of proteins, 2% of lipids, 21% of ashes which includes all of the mineral components of the plant, and 70% of carbohydrates which contributes to a large number of simple and complex glycodes. Finally, not relevant as a percentage of its elements but biologically very important, is the vitamins, free amino acids and all the other organic and natural molecules from the most diverse chemical characteristic that represent a part of real active principles biologically efficient and peculiar of the Aloe's specie.

The other major component that the plant is composed of is water which constitutes an average of 96% of the total weight. Of this, about 90% is in the cuticle and 98% in the inner part of the leaf, arriving at 99% of water in its juices.

CARBOHYDRATES PRESENT IN ALOE ARBORESCENS PLANT

Carbohydrates (glycodes) are the organic molecules most abundant on the planet; they are especially present on the plant world, where they all have similar qualities. However some of them differ because of a large presence of molecules peculiar to their kind.

Monosaccharides

In the Aloe plant, there are simple glucises, in particular glucose and mannose, which can vary from 10 to 25% in the various components of the leaf, cuticle, fillet and juice.

The glucose percentage represents more than 95% of the entire soluble glycodes of the leaf, whereas the remaining part is considered to be less important from the quantitative point of view. The glucose is a natural glycodes molecule that is metabolically important to humans as it represents the basic nutrient from which human energy is obtained.



Polysaccharides

There are many types of polysaccharides in the Aloe plant; as a base unit of the polysaccharides chain, they represent: a) mannose, acetylated mannose and a small quantity of galactose that constitutes the mannans (acemannans) b) glucose, xylose, arabinose and uronic acids that constitute homo- and heteropolysaccharides as glucan, hemicellulose, cellulose, pectins and arabinogalactans.

As previously stated, this glucydic group of molecules, as well as the presence of lignin, constitutes the highest percentage compared to the other organic molecules and minerals salts of the leaf.

The polysaccharidic part of the Aloe is important for the phytopharmaceutic and cosmetics industry for its specific properties.

In a topical use, these macromolecules assure a fair water supply to the skin, by forming a thin semi-permeable layer with a moisturising effect that keeps the skin soft and elastic.

When mannans are taken orally, they have the important peculiarity of not being digested at a gastro enteric level but are digested via endocytosis from the intestinal mucous membrane.

They can reinforce the immune system by activating the lymphocytes and the macrophages, which are cells with phagocytic properties, able to remove toxins and external material from the body.

The acemannan has anti-bacterial and anti-fungal properties; thanks to its capacity to form gel, the acemannan is able to protect the gastric mucosa from the damaging action of various agents, such as the hydrochloric acid of gastric juices.



THE ANTHRAQUINONIC'S TYPE OF MOLECULES

The group of molecules with the chemical name of anthraquinonics represent a wide group of substances that have many phytotherapeutic properties. It is clearly recognised for its regulatory action of intestinal motility, by the increase of peristalsis and its laxative effect.

The most important molecules of this group are: Aloe emodin, Aloin, Aloetic acid, Anthranol, Chrysophanic acid and Resistanol. Most of these products are well known in the Pharmacopoeia and are utilised in the preparation of laxative and digestive formulas.

In the case of particularly sensitive people, in the early stages of taking Aloe, especially with higher doses, there may side effects of diarrhoea, However, symptoms tend to decrease and cease after a few days after the commencement of treatment.

For this reason some producers of Aloe Vera-based products for human consumption, decide to remove the anthraquinonic part from the gel by using active carbon filters. However, this procedure also removes a component t which has amazing phytotherapeutic properties, not least the anthraquinonic property mentioned above.

Hence, to be able to eliminate this problem arising due to the use of carbon filters, it is good practice to retain the anthraquinonic part of the product during manufacturing; thereby retaining this important anti-bacterial and anti-viral property, with cytotoxic results on tumor cells, which are characteristic of some anthraquinonic molecules.

Aloetic acid.

Chemically this molecule is a hydroxymethylantrachinon cousin of monose. It is derived from Aloe emodin and has an antibiotic property, especially together with other antrachinons present in the Aloe.



Cinnamic acid.

This is a chemical product that has strong antibiotic, anti-bacterial and germicidal properties; very effective against bacteria such as salmonella, streptococcus and staphylococcus. It has also been found to inhibit the activity of bacteria that can cause peptic ulcers (*Helicobacter Pylori*). The phytotherapeutic properties of this phenolic molecule also assist with the inflammatory process and protect against the UV-radiations.

Chrysophanic acid.

This molecule is also part of the anthraquinonic family and shows similar properties to those described above for this group: it is a good depurative, diuretic and laxative agent with eupeptic and restorative properties.

Aloe emodin.

It is an anthraquinonic molecule (chemically hydroxyanthraquinone) that originates from Aloin through a split of a glycosidic bond that releases arabinose and Aloe emodin. This molecule is a component of the Aloe leaf. In addition to having properties belonging to the anthraquinonic family, it also has important cytotoxic effects, especially against precancerous and cancerous cells of specific tumors, as shown in many *in vitro* and *in vivo* studies.

Aloin.

Aloin is an active substance that belongs exclusively to the Aloe plant; composed by different glycosidic and anthraquinonic derivatives. The Aloin presents itself as two isomers, known as Aloin A and B, and is the molecule's classification that mostly represents this class of compounds, whereas the other classification is used for stating the precise origin of other Aloe plant varieties. Therefore these molecules are indicated as Barbaloin if extracted from *Aloe Barbadensis*, Socaloin if extracted from Aloe of the Socotrin variety, etc. It has laxative, detoxifying and antibiotic properties.

PHENOLIC COMPOUNDS

The phenolic group of molecules, which have an antioxidant effect, includes derivatives from Cinnamic acid, molecules with coumarinic



structure, the Flavonoids and the polyfunctional organic acids as well as the Tocopherols. These molecules have an important role in fighting the action of free radicals and reactive types of oxygen in chemical compounds which have many negative effects on the human body such as accelerating the cellular ageing process. The Aloe plant has many phenolic compounds, containing coumarinic structured as Glycosides. These molecules show a strong antioxidant activity, similar to the one of the Tocopherols. The Aloeresins A and B are phenolic molecules in the Aloe Arborescens.

SALICYLIC ACID

This substance is well known by the pharmacopoeia for being the basic component of Aspirin in its acetylated form. In the Aloe juice, the salicylic acid has antiseptic, analgesic and anti-inflammatory properties.

OTHER COMPONENTS

Many other kind of molecules that have phytotherapeutic properties, such as sterols, triterpenes, saponins and lignin are also found in the Aloe plant.

NUTRIENTS PRESENT IN THE ALOE

The Aloe plant appears to be qualitatively rich in vitamins and dietary minerals, although their absolute quantity is moderate. This puts the pure Aloe juice on a par with other foods supplements that contains a high quantity of minerals and vitamins



DIETARY MINERALS

Macro-elements

In the Aloe plant there is a large amount of minerals namely calcium, magnesium, potassium and sodium, called macro-elements, and there are also traces of manganese, iron, copper, zinc and chrome, that perform some specific functions in the body.

The macro-elements are not essential to maintain the functional integrity of a living person. However it is important for all these macro-elements to be present in the body and in balanced quantities.

Sodium.

Sodium is an essential mineral of the body where it can be found in the form of a cation in association with the chloride ion or bicarbonate.

Sodium is an important cation of extracellular liquids, able to regulate the osmotic process of this liquid compartment of the body; therefore it is essential in the conservation process of the hydro-saline balance and it must be present in very well-defined quantities.

Together with calcium, it plays an important role on the excitability of cardiac cells and therefore on the myocardium's contractibility.

In the form of sodium chloride, it stimulates the appetite and digestion, facilitating the secretion of gastric juices including Hydrochloric acid.

Potassium.

A dietary mineral present mainly in the intracellular fluids in its cationic form associated with the chloride ion. It is involved in osmotic processes from cell to cell. Moreover potassium is important for the growth of muscle tissues, giving them strength and flexibility. Potassium is important on all the excitatory processes within the body including nerves, heart, striated and smooth muscles and endocrine glands. An insufficient amount of potassium in the body can be the cause of numerous infections, such as dental caries, bronchitis's, joint pain, acne, and slower healing of dermal wounds. In case of Hypokalemia, the balance between potassium and sodium is highly compromised with grave consequences on the hydro-saline equilibrium.



Calcium.

Calcium is the macro element most represented in our body by representing 2 % of body weight as a fundamental component of the bone tissue. In its cation form it is present both in the extracellular and intracellular areas, where it has an important role in biochemical and physiological processes. Because many enzymes are dependant on it, calcium regulates the metabolic pathways, as well as being involved in body processes such as blood coagulation, muscular contraction, heart and nervous system functionality. In the Aloe plant it represents 5 % of the leaf's dry weight.

Magnesium.

This mineral element is related to calcium and is abundant in its bivalent cationic form in intracellular fluids, where it acts on many enzymatic systems. Together with calcium it can be found in bone tissues, which collect 50 % of all the magnesium present in the body. Magnesium is essential for muscular tone and growth rate, for the vitality of the body and for the correct functioning of many enzymes, especially the ones involved in cellular oxidation. Magnesium is a valuable element also for the immune system; its deficiency might expose the body to the aggression of viruses and bacteria. Magnesium is also involved in the synaptic neural transmission process and has antidepressant and soothing properties. In the Aloe plant, it represents 0.8 % of the leaf's dry weight, making it the fourth major mineral element of the plant.

Oligo-elements

Though oligo-elements are present only in small amounts =in live organisms, they still have an important role to play in metabolic and regulatory processes. However there is no strict demarcation line between trace elements and macro-elements: generally you can designate oligo-elements as those present in the tissues in quantity of one in a million or even less.

The presence of some elements is not always fully understood for the maintenance of life, or at least for human well being. In most cases, oligo-elements perform catalytic functions by the union of proteic molecules. In fact, these elements that are present only in trace amounts in the body,



actually are essential components of several enzymatic systems. Most of their actions are based on their ability to shape complex molecules, contributing to the specific conformation of the enzymatic proteins that include them.

Manganese.

Manganese's chemical properties are correlated with magnesium, but have a different function in the body. It has a very high antioxidant function and contributes by slowing down cellular ageing processes. Manganese is mostly located in the liver and in muscle tissues. It is also very important during breast feeding and in the growth of newborns.

A significant deficiency in manganese may cause excessive nervousness, blood vessel enlargement and convulsions. It is involved with calcium and potassium in metabolic regulation.

Iron.

Iron is improperly considered an oligo-element because iron is present in our bodies in amounts of 5 g; therefore not a percentage. The importance of iron in animals has been known for a long time; this element is involved in breathing as well as cellular breathing processes, being part of the prosthetic group of haemoglobin and cytochrome respectively. Iron present in the diet is absorbed in the bowel, in particular in the duodenum, although almost every part of the digestive tract is able to perform this function. To this end, the iron's ferrous form is preferable to its ferric form. Ascorbic acid has the capability to reduce the ferric ion into a ferrous one. This can improve its absorption.

Varied dietetic factors, like phosphates and phytates, are involved in the complexation of iron, but at the same time they cause a reduction in its adsorption. A deficiency in this mineral causes an alteration of the erythropoietic process, causing anaemia.

Copper.

Copper is an essential element for the body's well-being. The liver contains a major concentration of copper (6,6 µg/g of tissue), followed by the brain (5,4 µg/g of tissue), whereas the average quantity of copper contained in other tissues of vertebrates is approximately 1,5-2,5 µg/g of tissue. In the entire human body there is 100-130 mg of copper.



Copper is essential for appropriate erythropoiesis, probably because it is required for iron to be released into the tissues; copper is also important for the connective maturation of body tissue. It also assists in the building of several enzymes that are used for the catalysis of the reductions-oxidation.

A copper deficiency prevents the absorption of calcium and phosphate into bone tissue. Moreover, the deficiency inhibits the catalysis process that, in normal conditions, prevents Hydrogen peroxide accumulation into the tissues, which could become toxic. According to several authors, a decrease in catalysis activity can result in different tumours.

Zinc.

Zinc is present in our bodies in quantities of 2-3 g and is found especially in the liver and the pancreas. This element is essential for the functionality of several enzymes. Zinc has a very important role in nutrition; carbohydrates and proteins are absorbed depending on the presence of this element.

Chrome.

Generally animals contain very little of this element (i.e. 0, 1 p.p.m). Chrome is insufficiently absorbed by the intestine; in fact only 0.5-3% of dietary chrome can be absorbed by the body. This element is excreted in the urine and partly in faeces.

In plasma, =chrome =is carried by Transferrin, as is iron, with which it competes. Chrome's main biochemical function is associated with insulin and with the transportation of cellular metabolites through the cellular membranes. Insulin, in fact, requires the presence of chrome in order to perform its maximal effects. However, chrome does not perform any insulin-like function.

Cobalt.

This oligo-element is present in very small quantities in the human body (approximately 20 mg) and is especially concentrated in the spleen, pancreas and liver. Its deficiency causes a decrease of haemoglobin in the blood. Cobalt takes part in the structure of B12 vitamin, which in turn plays a part in the erythropoiesis process. It also assists in regulating the metabolism of proteins and carbohydrates.



VITAMINS

Vitamins are indispensable for many specific human body functions; they are essential nutrients, like some polyunsaturated lipids and various amino acids, that must be absorbed with other nutrients, because vitamins can't be synthesized by cells alone.

Animals obtain almost every vitamin directly or indirectly from vegetables. These molecules perform a regulatory function of cellular metabolism; hydro-soluble vitamins are essential for the activity of many enzymes, while those defined as fat-soluble perform other regulatory actions; some of them show hormonal activities too (vitamin D is a precursor of a molecule with a hormonal action). The resource of vitamin nutrients assures optimal health, while the deficiency of nutrients, due to nutrient reasons or alterations of several functions of the organism, causes specific pathological problems, which in the most serious case can lead to death.

On the other hand, while a surplus of hydro-soluble vitamins due to erroneous pharmacological treatments, doesn't have negative health consequences, a surplus of fat-soluble vitamins, such as A and D, can cause some toxicity.

For this reason, from a nutritional point of view, it would be good practice for vitamins to be obtained through an appropriate balanced diet, rather than through pharmaceutical formulations. The Aloe Arborescens plant presents a reasonable vitamin content, looking from both the qualitative and quantitative point of view. The most representative types of vitamins for this plant are reported in the following list with a brief quote about their benefits.

Hydro-soluble vitamins

Vitamin B1 or Thiamine.

It represents an important co-enzymatic form of enzymes involved in the cellular metabolism; vitamin B1 is essential in tissue growth processes and in the functionality of the nervous system. Its deficiency can cause serious neuritis, oedema and anaemia.



Vitamin B2 or Riboflavin.

It takes part in cellular respiration processes and in energy supply to the body. Its deficiency can cause dermatitis and haematologic disorders.

Vitamin B3 or Niacin.

This regulates metabolism and takes part in glucose utilisation processes. Its deficiency induces pellagra.

Vitamin B6 or Pyridoxine.

It is the co-enzyme of all enzymatic activities involved in the utilization of amino acids. It controls nervous system activity and contributes to skin integrity.

Vitamin C or Ascorbic acid.

This is probably the most known vitamin. With high and continuous dosages, vitamin C performs a preventive action for several pathologies from the simple cold to several infections ; it is utilized world-wide as a preventative against influenza (flu). This vitamin, which has a strong antioxidant and anti-free radical effect, constitutes an efficient protective agent for the body by promoting tissue growth, wound healing, polysaccharides synthesis and collagen development. It maintains mucosa functionality and is essential for the formation of bones and teeth. Its deficiency can cause scurvy disease.

Folic acid.

This vitamin is contained in every green vegetable and is found in the liver and kidney. In its co-enzymatic form, folic acid takes part in many reactions which include the methylation of several molecules essential for the body, such as thymine which is a DNA component. Together with vitamin B12, it is classified as an anti-anaemic vitamin: its deficiency can cause megaloblastic anaemia.

Choline.

Choline is an organic compound, at times classified as a group B vitamin, but actually it cannot be considered a vitamin because it can't be synthesized in the body. Either way, it performs several important functions. Choline is the precursor of Acetylcholine, a neurotransmitter



that is involved in =mobilization mechanisms and in the transportation of lipids. Its deficiency can cause fat infiltration of the liver.

Fat-soluble vitamins

Vitamin A or Retinol.

Vitamin A is not present in the animal world and cannot be found in vegetables, but it is well represented in quite a few of its precursors, in particularly Carotene. This vitamin is important in several cellular metabolic processes and is involved in the mechanism that synthesizes proteins and mucopolysaccharides. It contributes to maintaining the cellular membrane, particularly of mitochondria and lysosomes; and it is well known for its importance in regulating the biochemical mechanism of sight. A vitamin A deficiency can cause night blindness, dry and desquamated skin and high infection receptivity.

Vitamin E or Tocopherol.

This vitamin can be found in different chemical forms: α , β and γ tocopherols and represents, together with vitamin A and C, a very powerful antioxidant that protects the lipids of cell membrane from free radicals and reactive oxygen (like Hydrogen peroxide which is formed in several cell reactions). Vitamin E is known for maintaining skin health, wellness of organs such as liver, kidneys, intestine and gonads, and tissue growth rate (especially ones that need high stability of unsaturated fatty acids). Vitamin E also fosters the development of bone marrow. A lack of Vitamin E can cause skin alterations, anaemia and bone malformations. In high dosages, it helps fight infections. Several research studies has shown its efficiency against carcinogenic agents found in cigarettes tar. For many years, it has been considered effective against respiratory failure, pneumonia and asthma. Vitamin E is found in quantity in the gel of the Aloe Arborescens leaf.



PROTEINS

The Aloe protein content is relatively similar to any other vegetables, representing circa 7% of its dry weight. However, in absolute terms, considering that the Aloe leaf is made of 96-97% water, the quantity of protein is not very high.

However, the Aloe protein is important for two reasons:

- a) the presence of specific enzymes in the cellular structures of the leaf that perform specific functions that are involved in phytotherapeutic properties and facilitates several actions in the alimentary digestion; and
- b) After digestion, several proteins contained in Aloe, are contributing to the replacement of amino acid, even if in limited quantities, for our body.

Enzymes

Enzymes are protein molecules that make the execution of all vital functions in the cell possible, by increasing the speed of reactions involved in cellular metabolism. Thanks to their presence, all biochemical reactions can occur in real time and are compatible with life. Among several enzymes that enter in the Aloe enzymatic pool, the most significant from the phytotherapeutic point of view are the following.

Bradykinase.

Bradykinase is a proteolytic enzyme that specifically catalyses the degradation of the bradykinin peptide molecule. This peptide can stimulate the inflammation reaction that is activated every time an allergic reaction occurs in the human body as a response against an allergic agent that may enter, for example, through a wound. Bradykinin is responsible for pain and post-traumatic swelling of the tissue. Bradykinase enzyme contained in Aloe plant stimulates the immune system with the local activation of the macrophages and performs an analgesic, anti-inflammatory and cicatrizing action by degradation of bradykinin.



Catalyse.

This enzyme is in charge of degradation of the hydrogen peroxide that occurs through several metabolic reactions and which shows a cellular toxic effect, activating some reactions that produce free radicals. In the topical use of Aloe, the catalyse, by producing oxygen through the hydrogen peroxide degradation, can perform a cleaning reaction in the case of burns or ulcers, facilitating scar formation and inducing the production of fibroblasts.

Other enzymes present in Aloe plants that can be mentioned are amylase, cellulase, lipase, carboxypeptidase and others proteases. Those enzymes can represent a considerable help in the digestive processes by contributing to the degradation of the alimentary principles taken during digestion.

Amino acids

Amino acids represent the basic units of proteins; they are twenty different types. From the nutritional point of view, some amino acids are more important than others and therefore are called essential amino acids as they are not produced directly by our body and consequently we are dependent on their external supply.

Amino acids are mentioned here because the protein percentage present in Aloe plants assists to provide our bodies with the amino acids that we need, in particular the essential ones. However, it must be noted that the percentage of protein in the Aloe plant is very small.





BIOLOGICAL AND PHYTOTHERAPIC PECULIARITIES

The phytotherapeutic and biological properties of Aloe plants are large in number and variety. In the last century, scientific research expanded on the plant and broadened its uses to more than just the ones that were already present in folk medicine. Aloe's properties allow its use with a large variety of small and acute diseases because many of its active components may be helpful in healing them. The review of existing scientific literature and popular traditions allows us to list dozens of illnesses and diseases that can be relieved thanks to the Aloe plant. The incredible versatility of the Aloe plant in its uses in the fields of health and phytotherapy has been confirmed by several medical and scientific validations, obtained through experimentation on animal subjects and through controlled clinical researches that have been published on many international biomedical journals.

Instructions on the ways Aloe may be used are often found in folk traditions and in the experiences of its users. Moreover, the newest scientific knowledge on the chemical composition of the plant itself, and the wider awareness of its specific biological activities, enables us to adequately understand how Aloe can be successfully utilized.

According to a specific school of thought, supported by several studies done by North and South American researchers, the phytotherapeutic properties of Aloe can be related only to the polysaccharidic molecules of acemannan. That is why in all the Aloe Vera-based products that are sold in the USA, there is no trace of Aloin or other active ingredients present in the plant. Most likely, it is possible to say that the positive effects, fostered in our bodies by the intake of Aloe, are dependent on a synergistic and coordinated action, not just of the polysaccharides present but also all the other molecules resident in Aloe plants. The phytotherapeutic properties of these molecules are, in fact, already well known in the biomedical research field and in the pharmacopoeia. Furthermore, in this synergistic action, an important role is played by amino acidic nutrients, vitamins, dietary minerals, polysaccharides, unsaturated fatty acids, and also by some enzymes. Therefore it is relevant to consider that it is the Aloe plant, in its wholeness of botanical parts, its biochemical composition and its



biological peculiarities that determines the large variety of its phytotherapeutic properties.

Acknowledged Antioxidant Features

In the biochemistry field of research, the antioxidant features belong to all those molecules, of different chemical types, that are able to neutralize the copious types of free radicals of nitrogen, oxygen and reactive oxygen species; free radicals are the cause of the destruction and alterations of many molecules and subcellular structures. These changes may be the cause of the onset of ageing processes and of some pre-cancerous changes. There are many antioxidant molecules present in Aloe Arborescens plant; they are constituted mainly of manganese and copper mineral elements, vitamins B2, C and E and the anthraquinonic and phenolic molecules.

Manganese and copper are the active constituents of superoxide dismutase and glutathione peroxidase that perform antioxidant and anti-cellular ageing actions for the body, in particular for the skin. A similar effect, but with different mechanisms, is shown by Vitamin B2 that takes part as co-enzyme to the regulation of important reduction-oxidation reactions; for example for those of glutathione peroxidase that allows the conservation in the cells of high levels of reduced glutathione that is a molecule with an antiradicalic activity. Vitamin C is a typical antioxidant of the intracellular environment (in particular the white blood cells), whereas the same function is shown by Vitamin E at the level of cellular membrane lipids. Even anthraquinonic and phenolic molecules are efficient antioxidant agents. Therefore Aloe use assures a significant supply of molecular agents that contribute to strengthen the antioxidant reserves of our body and allows it to fight cellular ageing processes.



Anti-Ageing Properties

The already quoted antioxidant features that help the body in fighting free radicals and reactive oxygen molecules are responsible for the ageing processes; Aloe Arborescens presents quite a visible effect on rejuvenating the look of any individual. A principle reason for this incredible power has been found in the capability of the plant by fostering 6-8 times the production and the development of fibroblasts in the organism. These types of cells, located in the derma, are responsible for the production of collagen, a supporting protein that makes the skin elastic and tonic. In the ageing process, fibroblasts tend to reduce their production of collagen, both in quantity and quality, thereby reducing the skin's elasticity, becoming dry and scurfy, making wrinkles become more evident with the passing of time.

Aloe is able to increase fibroblasts' activity, with a consequent growth in quantity of produced collagen. The key to this process is the polysaccharides' actions on the process of multiplication of fibroblast cells and in their own moisturising and cohesive properties; the synergy of these three effects tend to make the skin look younger by rearranging the structure of the Integumentary system and to reduce wrinkles.

Antibacterial, Antifungal and Antiviral Properties

Each of these properties is supported by specific molecules of the Aloe Arborescens plant. The ability to hinder the development of fungus and bacteria is due to the presence in the Aloe plant of two kinds of organic acids: Cinnamic Acid and Methilanthraquinone. The cytotoxic features of these anthraquinonic compounds have an effective action on pathogens. Methilanthraquinone has a specific effect on particular fungi that can stay in our system, particularly in our intestines. Moreover, in addition to its anti-fungal properties, these molecules have a laxative and cleansing action that assists the body to remove the toxic scoria produced in the intestines.

The antibiotic properties found in the Aloe plant are due to the presence of some glycosides that have an anthraquinonic structure such as aloetic acid



and aloins. These, together with acemannan polysaccharides and bradykinase enzyme, both present in Aloe Arborescens, assist the coordinated and synergistic action of the immune system by activating macrophage cells and the production of interleukin.

Anti-inflammatory and Analgesic Properties.

The anti-inflammatory and analgesic properties are probably the most known and well appreciated phytotherapeutic characteristics of the Aloe plant, utilised over the centuries. The soothing and calming action on the skin is similar to that of anti-inflammatory synthetic steroids drugs, but without involving the side effects that are often associated with this kind of medicine. The anti-inflammatory active compounds are found in Aloe's three steroidal molecules: Campesterol, β -Sitosterol and Luteol; these act by inhibiting the effects of Prostaglandin.

The fast and effective control of the inflammatory reaction is also due to the intervention of Acemannan and Bradykinase: the first one activates the phagocytes and the second, the degradation of Bradykinin and some other interleukins, which are released in the inflammatory process. These effects on the inflamed area, together with the effects of salicylic acid and other antrakinonic molecules, such as Cinnamic acid and Isobarbaloin, themselves parts of the pool of active ingredients of Aloe Arborescens, also has lenitive and analgesic effects,

Cicatrization and Stimulant properties in the growth of the Epithelial

The cicatrizing property of the Aloe in the treatment of burns and wounds (including sunburn), has been known since the times of Alexander the Great. The positive results of cicatrisation on the wounds through topical and oral treatments of Aloe as a gel or whole as a leaf, appears to be complementary and connected in part to the plant's anti-inflammatory properties. Therefore the mechanisms involved in the two processes appear to be different, due to inhibitory reactions during the anti-inflammatory process and stimulation during the cicatrisation process by the plant's active ingredients.





The stimulation effect acting on specific types of cells work on the skin's development, such as fibroblasts, keratinocytes and dermis cells. Particularly important is the action on the fibroblasts designated for collagen production, which plays an essential role in the formation of fibrous scar tissue, together with other extracellular matrix components. Aloe works on the wound's cicatrisation process through two components: one with high molecular weight of the acemannans and one with low



molecular weight of the anthraquinones, of the vegetable sterols, the terpenes and the saponins. In this context, the acemannans stimulate the macrophages' activity with the production of chemical signals that influence the cellular proliferation, in particular of the fibroblasts, which are involved in the final step of wound healing, facilitating epithelization. Furthermore, acemannans are also involved in the inhibition of the development of several microorganisms inside the wound; this action is also performed by other molecules.

Several of Aloe's low molecular weight compounds are involved in the cicatrisation process. Some of them (vegetable sterols) are able to stimulate the angiogenesis processes, essential for tissue regeneration and revascularization. Other low molecular weight compounds such as cinnamic acid and chrysophanic acid perform important control and inhibition actions against infection, always a potential risk with wounds. It must be noted that the positive effects reported on the wounds is strictly connected to the use of fresh Aloe formulations, as some manufacturing processes can modify several of Aloe's active molecules, with a consequent loss of its phytotherapeutic properties.

Immunomodulation Features

Interaction among high molecular weight compounds plays an important role in many body processes which assist in maintaining its integrity.. Several molecules, for instance polysaccharidic and glycoproteic ones are involved in these processes, through the immune system. The effectiveness of the defence mechanism against foreign bodies is connected to the health and functionality of the immune system. Hence its ability to adapt its response according to circumstances or pathogens depends upon its integrity and health, which can be undermined and have serious pathological consequences.



Aloe Arborescens' immunomodulatory properties is due to the presence of acemannans (also by glucans), which has protective effects on the body. The highest concentration of these molecules amongst vegetables is found in the Aloe Vera and Arborescens plants; the molecules present are at their most biologically active form. The acemannans actively stimulate the lymphocyte response. The response reaction appears to be specific to the acemannans, compared with other polysaccharides, and the effect is focused on the stimulation of T-cells production and macrophages activity, with a production of interleukins characterized by strong immunogenic activity. All these activities that lead to a strengthening and modulation of the immune system are due to the polysaccharidic molecules without peptide components. However, it must be noted that in the Aloe plant, some glycoprotein products have been observed (such as lectins and Aloctin A and B) of the Aloe Arborescens, that appear to be involved in the strengthening of the immune system with an inhibitory effect in vivo of fibrosarcoma growth and other types of tumorous cell.

Singular Hypoglycemic Features

Many experimental and epidemiologic observations highlight a hypoglycemic effect in fresh Aloe leaf compounds, both in people with diabetes mellitus or insulin-dependent diabetes. This effect is due to the polysaccharidic fractions from the Aloe Arborescens watery extracts; especially two fractions of acemannans, named Erboran A and B. They are particularly useful in decreasing blood sugar levels at fasting in human diabetes and during experiments with rats.

As well as with this important effect, it must be noted that by administering the Aloe Arborescens to a diabetic patient, this has the added effect of treating skin ulcers often found in diabetic patients.



Potential Anti-tumorous Features

Many anecdotal results of the use of Aloe in folk medicine, and those recorded and reported in Educational publications and from several studies not only in vitro, but also on animals and from different clinical observations published in many international journals, have shown growing scientific support of the therapeutic anti-tumours potential of the plant. An extensive bibliography (characterized by prudent tones) reflects the anti-tumor effect of several active components of Aloe on pre-cancer and full cancer cells both in vitro and on animal-tested tumors. This has also been demonstrated on humans but even more so on domestic animals. This type of action appears to be connected to the immunostimulating properties of acemannan and glycoproteins, and also to the anti-viral and cytotoxic properties of anthraquinone compounds, as well as to the anti-oxidant and anti-free-radicals of anthraquinone and phenolic molecules; and also to the anti-oxidant vitamins (β - carotin, vitamin C and tocopherols) and finally the role played by oligo-elements. Below are listed examples of the scientific literature on the potentials of the Aloe phytotherapeutic properties, with some relevant quotes extracted.

a. Experimentation In vitro on pre-cancer and cancer cells

Several studies on Aloe's anti-tumour properties have been conducted on human and animals leukemic cell cultures and in that of neuroectodermal cells (as also in tumours of this type). The results were very encouraging; Aloe demonstrated a strong cytotoxic activity with the inhibition in the development of the tumour cell population.



> Lee, K.H., Kim, J. H., Lim, D. S., Kim C. H., 2000. Anti-leukaemic and antimutagenic effects of di(2.ethylhexyl)phthalate isolated from Aloe Vera Linne.

J. Pharm. Pharmacol. 52, 593-598

> Pecere, T., et all. 2000. Aloe-emodin is a new type of anticancer agent with selective activity againts neuroectodermal tumors.

Cancer Res. 60, 2800-2804

> Gribel, A. Pashinskii, K. 1986. Antimetastatic properties of Aloe juice.

Voposy onkologii. 32, (12), 38-40

> Winters, A. et all. 1981. Effects of Aloe extracts on human normal and tumors cells in vitro.

Econ. Bot. 35, 89-95

> Jeong-he-yun. et all. Ancicancer effects of Aloe on sarcoma 180 in IRC mouse and on human cancer lines.

Yakhak Hoechi. 38, (3), 311-321

b. Tests on the anti-tumoral effect on animals

Many publications appeared on International studies conducted to evaluate the anti-tumour and anti-metastasis effects of Aloe on several types of tumors induced in animals. Some positive results were reported, derived by the increase of Aloe for:



1) lowering of the hepato-carcinogenesis severity in rats; 2) inhibition of tumour induction with cancerous materials in rats; 3) interruption and regression of the development of induced fibrosarcoma in cats; 4) inhibition of liver carcinogenesis on rats; 5) decrease of guinea pig death rate which are carriers of Norman's sarcoma; 6) phytotherapeutic effect on tumours of rat pleura. As a consequence of these experimental results on the use of Aloe, in 1991, the United States healthcare authorities approved the use of acemannan for curing fibrosarcoma in dogs and cats for which it did not have any other treatment.

> Tsuda, H., Ito, M., Hirono, 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.

> Imanishi, K., Ishiguro, T., Saito, H., Suzuki, I., 1981. Pharmacological studies on a plant lectin, Aloctin A. I. Growth inhibition of mouse methylcholanthrene induced fibrosarcoma (Meth A) in ascites form by Aloctin A.

Experientia 37, 1186-1187.

> Yagi, A., Makino, K., Nishioka, I., Kuchino, Y., 1977. Aloe mannan, polysaccharide from Aloe Arborescens var. natalensis.

Planta medica 31, 17-20.

> Peng, S.Y., Norman, J., Curtin, G., Corrier, D., McDaniel, H.R., Busbee, D., 1991. Decreased mortality of Norman murine sarcoma in mice treated with the immunomodulator, acemannan.

Molecular Biotherapy 3, 79-87.

> 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.



> Decreased mortality of Norman murine sarcoma in mice treated with the immunomodulator, Acemannan.

Peng SY, Norman J, Curtin G, Corrier D, McDaniel HR, Busbee D. Source Department of Anatomy, College of Veterinary Medicine, Texas A & M University, College Station 77843.

> Corsi, M. M., et all, 1998. The therapeutic potential of Aloe Vera in tumor-bearing rats.

Int. J. Tissue React. 20, 115-118



c. Clinical studies

Epidemiologic research on pulmonary tumour spread by smokers has demonstrated that "the use of Aloe juice prevents pulmonary carcinogenesis, and also stomach and colon tumours".

> Pecere, T., et all. 2000. Aloe-emodin is a new type of anticancer agent with selective activity againts neuroectodermal 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.

> Inahata, K., Nakasugi, T. 1995. Mutagenesis inhibitors.

Japanese Patent. JP 7053397.

Other observations and research regarding the potency of Aloe's therapeutic effects have been reported in educational books, including regarding on neoplasia, representing the second cause of death in Italy. These observations represent a considerable facet of the use of this officinal plant in the anti-tumour remedies field; however these observations are not supported by any experimental or clinical tests.

> Romano Zago, 2003. Cancer can be cured

Adle edizioni Padova.



HEALTH CARE AND PHYTOTHERAPIC EFFECTS OF ALOE ARBORESCENS MENTIONED IN THE SCIENTIFIC LITERATURE

The list of biological and phytotherapeutic properties of the Aloe is very wide. Many people, not well informed or with few experiences in the phytotherapeutic field, might ask themselves how is it possible that a single plant can have so many positive health effects?; that it is one of the most effective natural detoxificant agents, most efficient stimulator and regulator of the immune system, a valid anti-inflammatory agent, analgesic, anti-septic, fostering agent for tissue regeneration, valuable cicatrizing agent, an anti-oxidant, and anti-ageing active factor, and also a protective agent of the skin. All these features have been highlighted by specific biomedical experimental studies as it has been widely shown here through a long, if not complete, biography. However, it is possible to be confident in answering this question by acknowledging that each molecule of the rich collection contained in the Aloe Arborescens plant has a specific phytotherapeutic property, at the same time is enhanced by its synergistic action with the other officinal components and nutritional elements. All these phytotherapeutic features make Aloe a very powerful remedy for many diseases, even severe ones, involving many of the organs of our bodies.

The active compounds contained in the Aloe Arborescens plant have a positive effect on the digestive system. If used as a mouthwash or directly in its gel form, Aloe has an effective role in protecting the oral mucosa, rapidly healing wounds and excoriations due to its cicatrizing anti-inflammatory and re-epithelizing properties. Moreover, through its anti-fungal and anti-microbial properties and ability to normalize the pH of the oral mucosa, it is an efficient halitosis control system.



The mucopolysaccharidic component, particularly rich in Aloe Arborescens, allows to develop in the stomach: a) a valid means of protecting the mucosa from the high acidity of gastric juices, as well as through the inhibition of chloride acid production; b) an effective cicatrizing effect on gastric and duodenal wounds, also inhibiting the proliferation of Helicobacter Pylori; and c) an anti-inflammatory action that has a soothing effect in cases of gastritis and oesophagitis.

Also in case of hepatic failure, the use of Aloe Arborescens has a health-stabilising effect thanks to it containing choline, inositol, zinc and selenium which intervene by fluidizing (a process similar to liquefaction) the liver cellular membranes, resolving part of the functional difficulties of the organ.

In the intestine, Aloe is particularly effective against: a) constipation, by enhancing the intestinal peristalsis through the mucilage and emi-cellulose and the cleansing action of the anthraquinonic component; b) colitis, diverticulitis and other pathologies of the small intestine, due to its anti-inflammatory, lenitive and cicatrizing action of some of its phytotherapeutic components; c) diarrhoea, even if the Aloin can have laxative effects, the use of Aloe Arborescens in the case of diarrhoea can help to solve this alteration of the intestinal process thanks to its nutritional, antibacterial, antiseptic and anti-inflammatory components; d) the settling of dangerous bacteria, because of its effectiveness against micro-organisms such as salmonella, streptococcus and staphylococcus, it assists in fighting the development of mycosis supported by intestinal Candida Albicans.

The action of the anthraquinonic component is supported also by the immune system stimulatory effect of the acemannan, effecting a detoxification of the body, efficiently maintaining the functionality of the entire digestive system.



Integumentary System

Another very efficient phytotherapeutic action performed by Aloe, is that concerning the skin's infections and pathologies. Even in this case, Aloe must be considered as a multi-purpose plant, with active components that are able to cure many skin's problems such as: acne, acne rosacea, pimples, furuncles, dermomycosis and eczema. All these skin infections, caused and supported by inflammatory processes, are induced by several pathogenic agents and by functional and metabolic alterations of the body, may find healthy effects in the wide selection of active components of the Aloe Arborescens' plant.

The use of Aloe Arborescens in a pure gel form or in cosmetic products such as ointment, creams, gel, or lotions, can also perform a protective action for the health and care of the skin. The Aloe cosmetic compounds for local use can clean, refresh, tone up and regenerate the skin through an adequate supply of vitamins. Furthermore, by stimulating the blood supply, these formulations can induce better oxygenation and a more efficient elimination of local toxins.



The skin appears smooth, hydrated and more elastic, as well as being enriched in anti-oxidant defences, effective against free radicals and their degenerative action on the epithelium. This produces an anti-ageing cutaneous and rejuvenation effect.

The extraordinary cicatrizing properties of Aloe can be utilized to facilitate and quicken healing processes of wounds, sunburns, heat and radiation burns, bedsores, fissures and stretch marks, through the consistent use of Aloe Arborescens-based cosmetic products.

Cardio-circulatory System

The intake of Aloe Arborescens has several positive effects on the cardio-circulatory system. In regards to the blood, in addition to eliminating toxins, several Aloe components assist in improving the erythropoiesis process, often resolving anaemia and consequently positively influencing headaches, weakness and muscle dystonia. The characteristic composition of Aloe, which presents high quantity of alimentary fibre, vitamins, anti-oxidants compounds, polyunsaturated fatty acids and also oligo-elements, is very useful in prevention and improvement of the lipid dysmetabolism, facilitating an optimum ratio of the HDL/LDL; assisting in the prevention of dangerous atheromatosis and atherosclerotic processes of blood vessel walls. The usage of pure Aloe gel for topical use or orally assists varicose veins that are due to a loss of flexibility of the vessel wall. Furthermore, the immunomodulatory, anti-inflammatory and analgesic properties of the Aloe plant, due to the presence of acemannans, anthraquinones and vitamins, contributes in improving lymphatic stasis problems associated with inflammation.



Immune System

The acknowledged and scientifically proven immunostimulatory and immunomodulatory proprieties of mucopolysaccharides such as mannans, acemannans and glucans present in Aloe Arborescens make this plant to be a protagonist of primary importance in improving numerous diseases connected to immune system deficiency. The use of Aloe Arborescens showed very satisfying and lenitive results in the case of the following:

Arthritis.

In particular rheumatoid arthritis, which is characterized by severe inflammation which damages joints, its complications may cause serious anatomic and functional damages, with a deposition of antigen-antibody complexes in the joints that cause swelling and pain. The prolonged use of Aloe Arborescens-based products for topical and oral use is very efficient in healing this pathological state.

Candida/ Thrush.

The bothersome itch caused by mycosis induced by Candida Albicans can be efficiently controlled by the topical use and administration of the Aloe Arborescens compound.

Herpes.

This skin disease is caused by a viral infection that weakens the immune functionality with characteristic cutaneous manifestations. Herpes Simplex and Herpes Zoster symptoms are effectively treated by using the Aloe Arborescens, both in topical and oral applications, due to its anti-bacterial, anti-viral, anti-inflammatory and immunomodulatory properties.



Chemotherapeutic treatment.

The Aloe Arborescens' properties can be useful in patients undergoing chemotherapy by utilizing it to assist with the body's fight against tumours, and counteracting the neoplasia's chemotherapeutic treatment, allowing the patients to better tolerate its side effects. The improvement of the body's defences, by stimulating the immune system, results in a better recovery, both physical and psychological,

Psoriasis.

The serious cutaneous manifestation of psoriasis, that medical science struggle to find a specific cure for, can be assisted with the constant topical use of Aloe's pure gel or cream, or the administration of Aloe Arborescens compounds.

Respiratory System

Chronic or severe inflammatory reactions resulting from influenza or bacterial infections can be assisted by the use of Aloe Arborescens. The use of this plant is very effective in case of:

Laryngitis and bronchitis.

Inhalation of Aloe's vaporized pure juice, can treat laryngitis and bronchitis which damages the upper part of the respiratory tract and airways. It is through the action of Aloe's acemannan that activates the immune defences by attracting macrophages and lymphocytes in the infected areas; and thereby treating the infection together with the anti-inflammatory and lenitive actions of Aloe's sterols.

Rhinitis and tonsillitis.

The germicidal action of several anthraquinones, associated with the lenitive and cicatrizing of mucopolysaccharides and vegetable sterols of Aloe, makes it an efficient remedy for these kinds of



annoying pathological conditions.

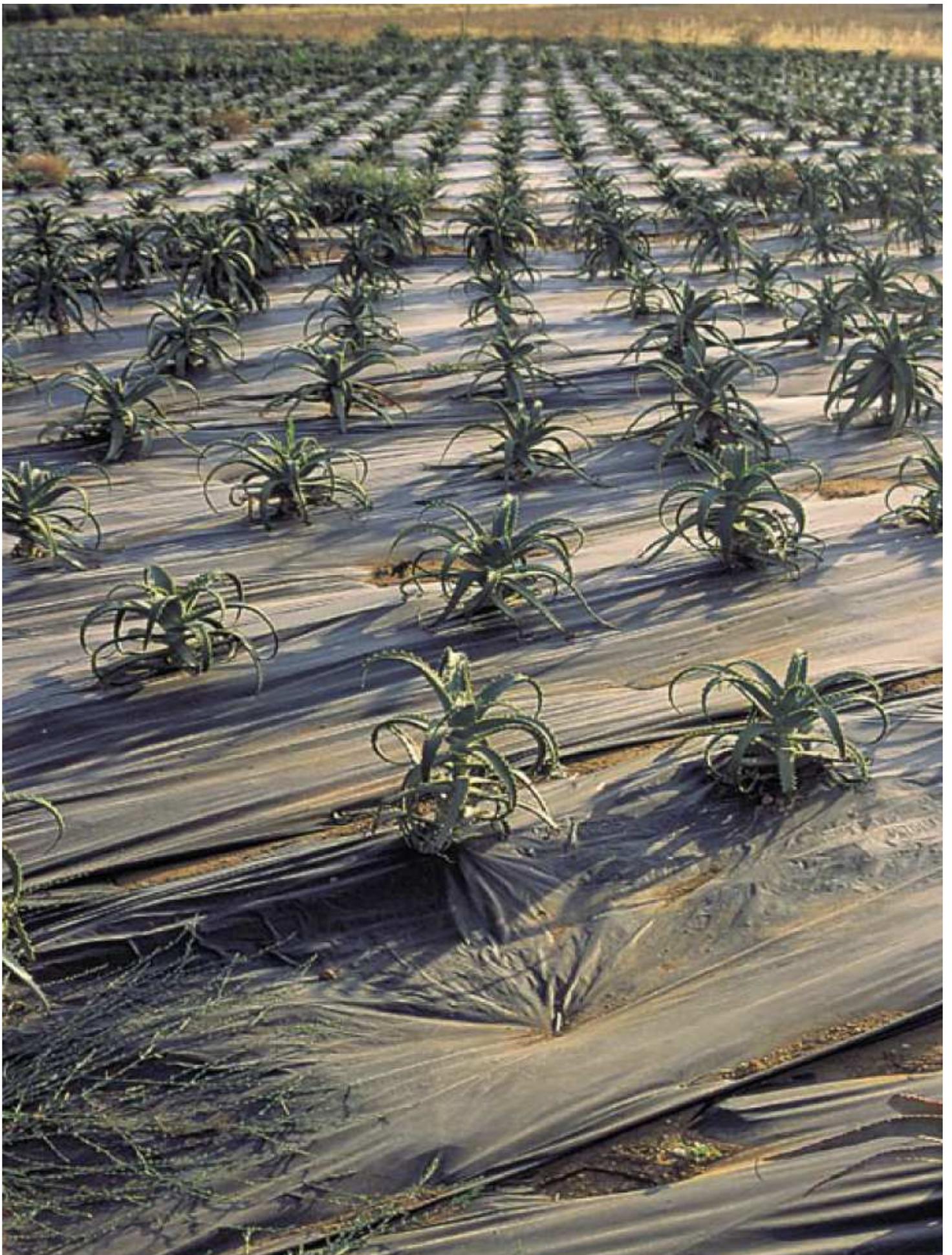
In conclusion of this review regarding the health benefits and phytotherapeutic use of the Aloe plant, in particular of its *Arborescens* variety, it must be stressed that its composition allows for a flexibility of use against diseases and pathological conditions that may affect organs and systems of our body. It should be remembered that, while in most common pharmaceutical formulations you will find the presence of only one or two pharmacological factors able to act on a specific pathology, in Aloe, there are many phytotherapeutic factors that singularly and in synergistic way can positively act on a wide range of pathological conditions; as it is shown in the selection of bibliographic references from experimental research at the end of this publication.





IL PUCINO FARM





The History

In the spring of 1997, as a consequence of surgery to remove a cancer from my father, I saw, for the first time, the Aloe plant in the garden of Palatini Institute in Salzano, a province of Venice.

In those years, Doctor Campagnaro imported Aloe plants to Italy from Cuba where they spontaneously grew, and where an acquaintance he knew harvested them and sent them to our country on a monthly basis.

The advice was to bring several leaves home and to eat a piece of a couple of centimetres wide every morning.

I perfectly remembered that April afternoon which involved me in one of those crossroads of life that sometimes the destiny submits you to and makes you taste the scent of a turning point in your life.

I was able to see through Leonardo's eyes, the hidden beauty of that plant and I was enchanted.



Voracious, as every passion is, mine pushed me to investigate as far as I could all about the Aloe plant, so I began to travel around Italy trying to improve my knowledge and understanding of the whole world concerning this plant.

This is the reason why I knew the story of Father Romano Zago, through the photocopies of an article printed on a missionary life's newspaper that explained how this monk of Italian origins, gained knowledge of a popular medicine recipe and successfully utilized it to help people affected by several diseases.

First I met Mrs. Venzo who was the first lady in Italy, to begin to prepare the "formula" following the recipe; she also was the spokesperson of the monk in Italy. Then, after a while, I met Dante Giuntini that founded the "Amici Aloe Padre Romano Zago" Association in Lucca, so I copied this and found a twin one in Trieste.

The constitution of this association was born with the purpose to divulge and promote the study of Aloe plant, in particularly of the Aloe Arborescens, and of the monk's recipe.



We started to organize the first conferences with Father Romano in Italy and we included doctors and herbalists for analysing the results of the studies; the topic was very stimulating and raised a deep interest, but by the time of founding an Italian Federation of all the associations, that in the meantime were founded in several cities, something went amiss, the Aloe brotherhood came undone and everyone went on their own way.

The Plantation

At the same time, I rented a plot on the coastline of Trieste; I decided to register a farm and named it "Il Pucino". I began to take care of Aloe plants, buying them in Sicily and in Liguria and trying to familiarize them with the surroundings. Understandably I had many problems because the climate of Trieste, although mitigated from the proximity of the sea, couldn't certainly be suitable for the growing of the plants. For this reason, at the beginning of the year 2000, I decided that the best thing to do was to move the plantation to a region of Southern Italy.

As it always happened; since I decided to be interested in this plant; the destiny made me meet the right person: Giacomo.

Thanks to his support, I have been able to succeed in what I had in mind and together we started this plantation in Sicily, in the valley between Mount Erice and Mount Cofano, a few hundred metres from the sea, where the dwarf palm can grow naturally and the prickly pears grows as tall as three metres.

Firstly, during the dry season we would bring water to the plantation with a tanker, then we used the well of his cousin, using a generator to pump the water out; at a later stage we finally connected the electricity and from this year on we were able to build and use a cistern made of bricks. These were some of the innumerable problems that we have resolved together in these years.

From the beginning, this plantation was certified as organic from the Mediterranean Institute of Certification; today it stretches to almost 10,000 mother plants and we are able to produce up to two thousand kilos of fresh leaves every month all the year around.



Over the years, we have selected all the different and most interesting variety of the plants by choosing the content of its active components by mixing them together during the production phase.

The Laboratory

Every week, an express courier delivers Aloe leaves harvested in Sicily to the laboratory of Trieste, where they are mixed with honey and alcohol and then repackaged and sent throughout the whole of Italy. This way, it allows us to offer to the shops an always fresh product without preservatives.

Aware of our effort to guarantee the quality, the shops purchase only the quantity that is strictly necessary.

Also, the laboratory is controlled by the Mediterranean Institute of Certification so that the final product can be proud of this certification which represents the significance of the quality of the ingredients.

The Purpose

The main purpose of Il Pucino farm is to offer a product that can show a constant pursuit of quality.

The control of the entire production chain, beginning from the treatment of the cultivation to the weekly production without storage, represents our entire work philosophy.

To this philosophy, it could be added the will to spread the word and make known and appreciated the quality of this wonderful plant and its great potentialities of equilibrium, recovery and health.





Testimonies

Doctor Leonardo Campagnaro

Director of Palatini Institute of Salzano

Doctor Demetrio Iero

Specialist in Integrated vibrational medicine



Its several years that we have been using the Aloe with excellent results as a great complementary treatment in many human degenerative pathologies.

Since Father Romano held the first conferences in Italy, we have been using our usual water therapies with Aloe extracts, especially when the pathological history doesn't show any other possibilities of spontaneous resolution.

It's certainly not a panacea, but the correct use, and above all, the innocuous use of Aloe, often has modified the circumstances of the disease in unexpected ways.

In the last years, we have accumulated many experiences and the positive results lead us to suggest with certainty that this is a valid help for health-care.

The products of the "Il Pucino" farm have been up til now the best one offered on the market and therefore we embrace with joy and true fondness, the experiences accrued by my friend Maurizio de Vonderweid.

Doctor Leonardo Campagnaro

Director of Palatini Institute of Salzano



My professional experience with the use of Aloe Arborescens has shown positive results on hundreds of patients.

The medical cases, treated by me, concerned inflammatory diseases, both severe and chronic, present in internal organs and in outer parts of the body and degenerative pathologies of various types (leukaemia, lymphomas, solid cancers, etc.).

The results obtained by combining medical treatments with daily absorption from one to three doses of Aloe Arborescens per cycle that goes from a minimum of two months (repeated cycles two or three times throughout the year) to prolonged prescriptions for two or three years, have always given excellent results.

Total or almost complete remissions of the inflammatory processes, both severe and chronic, have been verified as a considerable improvement of the immune response system of the treated patients.

About the treated degenerative pathologies, it could be highlighted that an improvement both in the physical examination and in the instrumental ones were found, especially for the hematopoietic system's pathologies, and those regarding the gastrointestinal apparatus, the mammary glands and the thyroid.

Doctor Demetrio Iero

Specialist in integrated vibrational medicine



Essential bibliography

- > **Afzal, M., Ali, M., Hassan, R.A.H., Sweedan, N., Dhimi, M.S.I., 1991.** Identification of some prostanoids in Aloe Vera extracts. *Planta Medica* 57, 38-40.

- > **Ando, N., Yamaguchi, I., 1990.** Sitosterol from Aloe Vera gel. *Kenkyu Kiyo-Tokyo Kasei Daigaku* 30, 15-20.

- > **Anton, R., Haag-Berrurier, M., 1980.** Therapeutic use of natural anthraquinone for other than laxative actions. *Pharmacology* 20, 104-112.

- > **Ashley, F.L., O'Loughlin, B.J., Peterson, R., Fernandez, L., Stein, H., Schwartz, A.N., 1957.** 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.

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

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

- > **Bland, J., 1985.** Effect of orally consumed Aloe Vera juice on gastrointestinal function in normal humans. *Preventive Medicine* 14, 152-154.

- > **Blitz, J., Smith, J.W., Gerard, J.R., 1963.** Aloe Vera gel in peptic ulcer therapy: preliminary report. *Journal of the American Osteopathic Association* 62, 731-735.



- > **Bloomfield, F., 1985.** Miracle Plants: Aloe Vera. Century, London.
- > **Brossat, J.Y., Ledaut, J.Y., Ralamboranto, L., Rakotovao, L.H., Solar, S., Gueguen, A., Coulanges, P., 1981.** Immunostimulating properties of an extract isolated from Aloe vahombe. Archives Institut Pasteur Madagascar 48, 11-34.
- > **Bruce, W.G.G., 1967.** Investigations of antibacterial activity in the Aloe. South African Medical Journal 41, 984.
- > **Bruce, W.G.G., 1975.** Medicinal properties in the Aloe. Excelsa 57-68.
- > **Capasso, F., Borrelli, F., Capasso, R., DiCarlo, G., Izzo, A.A., Pinto, L., Mascolo, N., Castaldo, S., Longo, R., 1998.** Aloe and its therapeutic use. Phytotherapy Research 12, S124-S127.
- > **Cera, L.M., Heggers, J.P., Robson, M.C., Hagstrom, W.J., 1980.** The therapeutic efficacy of Aloe Vera cream (Dermaide Aloe(TM)) in thermal injuries. Two case reports. J. Am. Animal Hospital Assoc. 16, 768-772.
- > **Davis, R.H., 1988.** Topical influence of Aloe Vera on adjuvant arthritis, inflammation and wound healing. Physiologist 31, 206.
- > **Davis, R.H., Maro, N.P., 1989.** Aloe Vera and gibberellin. Anti inflammatory activity in diabetes. Journal of the American Podiatric Medical Association 79, 24-26.
- > **Davis, R.H., Agnew, P.S., Shapiro, E., 1986.** Antiarthritic activity of anthraquinones found in Aloe for podiatric medicine. Journal of the American Podiatric Medical Association 76, 61-66.



- > **Davis, R.H., Kabbani, J.M., Maro, N.P., 1986a.** Wound healing and antiinflammatory activity of Aloe Vera. Proceedings of the Pennsylvania Academy of Science 60, 79.
- > **Davis, R.H., Leitner, M.G., Russo, J., 1987b.** Topical anti inflammatory activity of Aloe Vera as measured by ear swelling. Journal of the American Podiatric Medical Association 77, 610-612.
- > **Davis, R.H., Leitner, M.G., Russo, J.M., Byrne, M.E., 1989a.** Anti inflammatory activity of Aloe Vera against a spectrum of irritants. Journal of the American Podiatric Medical Association 79, 263-276.
- > **Duke, J.A., 1985.** Aloe barbadensis Mill. (Liliaceae). CRC Handbook of Medicinal Herbs. CRC Press, Boca Raton, FL, pp. 31-32.
- > **Egger, S., Brown, G.S., Kelsey, L.S., Yates, K.M., Rosenberg, L.J., Talmadge, J.E., 1996b.** Hematopoietic augmentation by a beta-(1,4)-linked mannan. Cancer Immunology Immunotherapy 43, 195-205.
- > **Frumkin, A., 1989.** Aloe Vera, salicylic acid and aspirin for burns. Plastic and Reconstructive Surgery 83, 196.
- > **Fujita, K., Yamada, Y., Azuma, K., Hirozawa, S., 1978b.** Effect of leaf extracts of Aloe Arborescens Mill subsp. natalensis Berger on growth of Trichophyton entagrophytes. Antimicrobial Agents and Chemotherapy 35, 132-136.
- > **Fujita, K., Ito, S., Teradaira, R., Beppu, H., 1979.** Properties of a carboxypeptidase from Aloe. Biochemical Pharmacology 28, 1261-1262.



- > **Gowda, D.C., Neelisiddaiah, B., Anjaneyalu, Y.V., 1979.** Structural studies of polysaccharides from Aloe Vera. *Carbohydrate Research* 72, 201-205.
- > **Grindlay, D., Reynolds, T., 1986.** The Aloe Vera phenomenon: a review of the properties and modern uses of the leaf parenchyma gel. *Journal of Ethnopharmacology* 16, 117-151.
- > **Haq, Q.N., Hannan, A., 1981.** Studies on glucogalactomannan from the leaves of Aloe Vera, Tourn.(ex Linn.). *Bangladesh Journal of Scientific and Industrial Research* 16, 68-72.
- > **T'Hart, L.A., van Enkevort, P.H., van Dijk, H., Zaat, R., de Silva, K.T.D., Labadie, R.P., 1988.** Two functionally and chemically distinct immunomodulatory compounds in the gel of Aloe Vera. *Journal of Ethnopharmacology* 23, 61-71.
- > **T'Hart, L.A., van den Berg, A. J. J., Kuis, L., van Dijk, H., Labadie, R.P., 1989.** An anticomplementary polysaccharide with immunological adjuvant activity from the leaf parenchyma gel of Aloe Vera. *Planta Medica* 55, 509-512.
- > **T'Hart, L.A., Nibbering, P.H., van den Barselaar, M.T., van Dijk, H., van den Berg, A.J., Labadie, R.P., 1990.** Effects of low molecular constituents from Aloe Vera gel on oxidative metabolism and cytotoxic and bactericidal activities of human neutrophils. *International Journal for Immunopharmacology* 12, 427-434.
- > **Heggers, J.P., Pelley, R.P., Robson, M.C., 1993.** Beneficial effects of Aloe in wound healing. *Phytotherapy Research* 7, S48-S52.



- > **Heggers, J.P., Kucukcelibi, A., Listengarten, D., Stabenau, C.J., Ko, F., Broemeling, L.D., Robson, M.C., Winters, W.D., 1996.** Beneficial effect of Aloe on wound healing in an excisional wound model. *Journal of Alternative and Complementary Medicine* 2, 271-277.
- > **Hutter, J.A., Salman, M., Stavinoha, W.B., Satsangi, N., Williams, R.F., Streeper, R.T., Weintraub, S.T., 1996.** Anti-inflammatory glucosyl chromone from Aloe barbadensis. *Journal of Natural Products* 59, 541-543.
- > **Imanishi, K., 1993.** Aloctin A, an active substance of Aloe Arborescens Miller as an immunomodulator. *Phytotherapy Research* 7, S20-S22.
- > **Jamieson, G.I., 1984.** Aloe Vera (Aloe barbadensis Mill.). *Queensland Agricultural Journal* 110, 220.
- > **Kinoshita, K., Koyama, K., Takahashi, K., Noguchi, Y., Amano, M., 1996.** Steroid glucosides from Aloe barbadensis. *Journal of Japanese Botany* 71, 83-86.
- > **Kodym, A., 1991.** 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.
- > **Koike, T., Beppu, H., Kuzuya, H., Maruta, K., Shimpo, K., Suzuki, M., Titani, K., Fujita, K., 1995.** A 35 kDa mannose-binding lectin with hemagglutinating and mitogenic activities from 'Kidachi Aloe' (Aloe Arborescens Miller var. natalensis Berger). *Journal of Biochemistry* 118, 1205-1210.



- > **Lee, M.J., Yoon, S.H., Lee, S.K., Chung, M.H., Park, Y.I., Sung, C.K., Choi, J.S., Kim, K.W., 1995.** In vivo angiogenic activity of dichloromethane extracts of Aloe Vera gel. Archives of Pharmacological Research. 18, 332-335.
- > **Lindblad, W.J., Thul, J., 1994.** Sustained increase in collagen biosynthesis in acemannan impregnated PVA implants in the rat. Wound Repair and Regeneration 2, 84.
- > **Lorenzetti, L.J., Salisbury, R., Beal, J.L., Baldwin, J.N., 1964.** Bacteriostatic property of Aloe Vera. Journal of Pharmaceutical Science 53, 1287.
- > **Marshall, G.D., Druck, J.P., 1993.** In vitro stimulation of NK activity by acemannan. Journal of Immunology 150, 241A.
- > **Obata, M., Ito, S., Beppu, H., Fujita, K., Nagatsu, T., 1993.** Mechanism of anti-inflammatory and antithermal burn action of Aloe Arborescens Miller var. Natalensis Berger. Phytherapy Research 7, s30-s33.
- > **Pierce, R.F., 1983.** Comparison between the nutritional contents of the Aloe gel from conventionally and hydroponically grown plants. Erde International 1, 37-38.
- > **Reynolds T., Dweck A. C., 1999.** Aloe Vera leaf gel: a review update. Journal of Ethnopharmacology. 68, 3-37.
- > **Ross, S.A., ElSohly, M.A., Wilkins, S.P., 1997.** Quantitative analysis of Aloe Vera mucilaginous polysaccharides in commercial Aloe Vera products. Journal of AOAC International 80, 455-457.



- > **Rubel, B.L., 1983.** Possible mechanisms of the healing actions of Aloe gel. *Cosmetics and Toiletries* 98, 109-114.
- > **Sabeh, F., Wright, T., Norton, S.J., 1996.** Isozymes of superoxide dismutase from Aloe Vera. *Enzyme Protein* 49, 212-221.
- > **Saito, H., 1993.** Purification of active substances of Aloe Arborescens Miller. and their biological and pharmacological activity. *Phytotherapy Research* 7, S14-S19.
- > **Saoo, K., Miki, H., Ohmori, M., Winters, W.D., 1996.** Antiviral activity of Aloe extracts against cytomegalovirus. *Phytotherapy Research* 10, 348-350.
- > **Schechter, S.R., 1994.** Aloe Vera:the healing plant. *Health Foods Business*, 23-24.
- > **Shelton, R.M., 1991.** Aloe Vera Its chemical and therapeutic properties. *International Journal of Dermatology* 30, 679-683.
- > **Shida, T., Yagi, A., Nishimura, H., Nishioka, I., 1985.** Effect of Aloe extract on peripheral phagocytosis in adult bronchial asthma. *Planta medica* 51, 273-275.
- > **Soeda, M., Otomo, M., Ome, M., Kawashima, K., 1966.** Studies on antibacterial and anti-fungal activity of Cape Aloe. *Nippon Saikingaku Zasshi* 21, 609-614.



- > **Stuart, R.W., Lefkowitz, D.L., Lincoln, J.A., Howard, K., Gelderman, M.P., Lefkowitz, Sostanza secca, 1997.** Upregulation of phagocytosis and candidal activity of macrophages exposed to the immunostimulant, acemannan. *International Journal of Immunopharmacology* 19, 75-82.
- > **Sydskis, R.J., Owen, D.G., Lohr, J.L., Rosler, K.H., Blomster, R.N., 1991.** Inactivation of enveloped viruses by anthraquinones extracted from plants. *Antimicrobial Agents and Chemotherapy* 35, 2463-2466.
- > **Syed, T.A., Ahmad, A., Holt, A.H., Ahmad, S.A., Ahmad, S.H., Afzal, M., 1996a.** 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.
- > **Teradaira, R., Shinzato, M., Beppu, H., Fujita, K., 1993.** Antigastric ulcer effects of Aloe *Arborescens* Mill. var. *natalensis* Berger. *Phytotherapy Research* 7, S34-S36.
- > **Tizard, I., Carpenter, R.H., Kemp, M., 1991.** Immunoregulatory effects of a cytokine release enhancer (Acemannan). *International Congress of Phytotherapy, 1991, Seoul, Korea*, 68.
- > **Wozniewski, T., Blaschek, W., Franz, G., 1990.** Isolation and structure analysis of a glucomannan from the leaves of Aloe *Arborescens* var. Miller. *Carbohydrate Research* 198, 387-391.
- > **Yagi, A., Harada, N., Yamada, H., Iwadare, S., Nishioka, I., 1982.** Antibradykinin active material in Aloe *saponaria*. *Journal of Pharmaceutical Sciences* 71, 1172-1174.



- > **Yagi, A., Harada, N., Shimomura, K., Nishioka, I., 1987a.** Bradykinin-degrading glycoprotein in Aloe Arborescens var. natalensis. *Planta Medica* 53, 19-21.
- > **Yagi, A., Shida, T., Nishimura, H., 1987c.** Effect of amino acids in Aloe extract on phagocytosis by peripheral neutrophil in adult bronchial asthma. *Japanese Journal of Allergology* 36, 1094-1101.
- > **Yamamoto, M., Masui, T., Sugiyama, K., Yokota, M., Nakagomi, K., Nakazawa, H., 1991.** Anti-inflammatory active constituents of Aloe Arborescens Miller. *Agricultural and Biological Chemistry* 55, 1627-1629.

All the information reported in this booklet came from an accurate selection of the scientific bibliography on the plant.





*“the healing
is a personal responsibility
which cannot be
delegated to other”*

