



Aloe Vera of Australia Products

Aloe Medicinal Substances

Present And Future Potentials

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The uses of substances derived from Aloe vera plants in a folk medicine role are widely recognized. The actual value of these Aloe substances and other plant derived substances in helping to improve pathologic conditions, relieve complaints and restore health has been debated from antiquity to the present.

Evolving historical patterns of the use of plant substances in traumatic conditions and in systemic illnesses have revealed that man may have first observed animals who were injured or ill to be eating or rolling in patches of certain plants. Subsequently, early man found that these plants would aid in healing human illnesses. Initially, Aloe substances were mainly used as healing aids for topical skin problems and conditions and this has remained their most wide spread use to the present. However, over the years the use of these and some other plant substances has been extended into scientific experimental treatments for internal upsets and conditions.

Less well recognized, but just as important, has been another evolution which is continuing in the use of Aloe substances. This has been the change in the use of Aloe from mainly folk medicine applications to more recent uses as **phytotherapeutics**, i.e., plant substances used in scientifically recognized therapeutic roles. Thus, **Aloe substances are joining kampo and chinese traditional medicine substances as major members of the world group of medically active phytotherapeutic agents.**

Another pattern of evolution in Aloe and other phytotherapeutic substances is taking place today. This pattern follows the usual pathways observed for other crude plant medicinal substances in which they are gradually replaced by chemical drugs. For example, the usual process has been to isolate the active ingredients from crude plant medicinal substances and then develop derivatives. This first move to change from crude plant medicinal substances to chemical drugs has been driven by increasing scientific interest in the pharmacological mechanisms of the crude plant substances acting as drugs against such diseases as AIDS and cancer. In the usual situation of this type, active components from crude plant drugs are isolated and purified by means of sequential



Aloe Vera of Australia Products

chemical processes and their structures are determined. Then the bioeffects of these purified active plant components are studied using in vitro experiments, in animal therapy models and then later, and in much more detail, in human subjects with applicable disorders. Table 1 presents uses and origins of some representative plant substances which have allowed this evolution.

Table 1
Uses & Origins Of Representative Plant Substances

Plant Substance	Use	Origin
Quinine	antimalarial	S.A. cinchona tree bark
tubocurarine	muscle relaxant during surgery / seizures	liana tree bark
digoxin	element in progesterone in birth control pills	wild yams of C.A.
reserpine	control hypertension	shrub of S.E. Asia
vincristine	acute childhood leukemia Hodgkins disease	rosy periwinkle
salicylic acid	headaches	willow tree leaves
digitalis	cardiac disorders	fox glove
Chinese Traditional Medicine & Kampo	wide range of disorders	several mixtures of medicinal plant substances
Aloe	wide range of disorders	extracts of leaf, juice, covering of several medicinal Aloe

There are several major reasons why the evolutions in uses and in the forms of phytotherapy substances are continuing to occur and why these evolutions will continue at an even more rapid pace in the future. First, medicinal plants from the land and sea only grow in a few areas of the world and they are difficult to discover, so their supply is very limited. Second, not all medicinal plants can be cultivated away from their native origins. Third, the content of the medically active substances in the plants has been found to vary considerably according to the method, the time and the place of collection, the weather before and during the harvest period, and the water and soil used for culturing. These and other plant cultivation factors will make it difficult to maintain in the long term a constant supply of original plant substances of consistent potency. With an ever increasing market demand for the plant medicinal active substances, this major



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disadvantage of crude plant substances stands out when compared to synthesized drugs which are free of these problems.

In addition, the Aloe substances, like the other crude drugs, are usually used for more than one illness or set of symptoms. They also are usually used in combination with other drugs and given for a long time in small doses. Moreover, **Aloe is a complex mixture of a wide variety of biologically active components. These Aloe substances are in some way integrated naturally to mainly exert what appears to be a synergistic effect and also to counteract side effects.**

Although we are now in the “age of chemical drugs for medical use,” Aloe applications have been and continue to be based mostly on “folk medicine experiences.” It is granted that many chemical components have been isolated from various Aloe materials and some of their chemical and bioactive properties have been determined. However, only a few of these isolated Aloe substances exhibit the same pharmacological effects of the whole Aloe. Therefore, it appears that in the case of Aloe bioactivities, the whole may not be equal to the sum of its parts, but may be many times greater than the sum of its parts - a multiplier effect!

For Aloe substances today, it is most important now to determine what the most productive pathway will be to follow in the future. I believe this pathway should have the following major markers:

1. identification of the bioactive components in Aloe.
2. determine the mechanism of action / mode of action.
3. chemical analysis of the active and inactive components.
4. evaluation of the main pharmacologic properties.

In summary, the present posture of Aloe substances is presented in the following as it relates to several major areas of importance to scientific investigators and potential sponsors of research.

For example, at the present time the major uses and applications of Aloe substances are shown in Table 2. In addition, the scientific research and development areas now being investigated, which will be the areas of continuing scientific research and medical substance applications in the future (as suggested by the scientific research topics discussed at the recent first International Congress of Phytotherapy) are presented in Table 3.



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Table 2

Usages & Applications Of Aloe

- A. In Vivo Uses Identified by Folk Traditional Medicine
 - 1. Healing of minor cutaneous injuries, such a blisters, abrasions, cuts, burns, bites and scalds
 - 2. Protection and care of external skin, such as cleansing, moisturizing, tightening and in mixes as sunscreens and anti-chapping compounds

- B. In Vivo Identified by Scientific Studies
 - 1. Anti-inflammatory
 - 2. Anti-microbial
 - 3. Diet supplementary

- C. In Vitro Bioactivities Identified by Scientific Studies
 - 1. Cellular modulation
 - a. cell attachment
 - b. growth stimulation
 - c. wound healing
 - 2. Immunological alterations
 - a. immunodiffusion precipitation
 - b. hemagglutination
 - c. mitogenic stimulation of immune cells
 - d. lectin reactions with immune cells

Table 3

Topics Of Scientific Research Reports Presented At The International Congress Of Phytotherapy (*Seoul, Korea October 15-19,1991*)

Neurologic Studies
Aging
Inflammation Studies
Wound Healing Studies
Immune Factors and Immunologic Modulation Studies
Pharmochemistry Reports
Antimicrobial Studies
Gastrointestinal Studies
Neoplasia Studies
Metabolic Studies
Phytotherapy Clinical Application Studies



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It is important to note that phytotherapeutic substances, i.e., plant derived substances used in treatments of medical conditions, when employed in a folk medicine setting do not perform in all medical situations. Moreover, little is known about the site of action of Aloe substances, namely whether they act at the systemic, organ, tissue, cell or subcellular levels or at the surface-cytoplasmic, nuclear-genetic or structural biological and metabolic levels of cells. Accordingly, it is obvious that swallowing boiled leaf extracts will not dissolve blood vessel fatty plaques or blood clots. Likewise, drinking tea brewed from plant parts will not reverse myocardial infarction damage or lung cancer. The point made is that we all recognize that there are major limits to traditional folk medicine uses and that it is dangerous to advise the use of plant substances in folk healing approaches over the advantages of modern day medicine.

In conclusion, while **numerous medicinal Aloe remedies have been proven to folk medicine satisfactions by time and usage, without any scientific reason behind why or how they work**, current scientific studies are being directed to identify and understand the operational mechanisms of action of Aloe substances. Such studies, when completed, promise to even further expand the potential usages and biomedical applications of Aloe.