

ALOEVERA - INTRODUCTION

Preliminary consulting

Within the frame of a project study or a preliminary consulting, ensymm provides a clear picture of the project and evaluates the feasibility of the investment.

Network

Based on our international network ensymm is able to provide you with a custom tailored turnkey production line , according to the budget , capacity and other restrictions.

Project execution

Ensymm will organize and supervise the entire project execution.

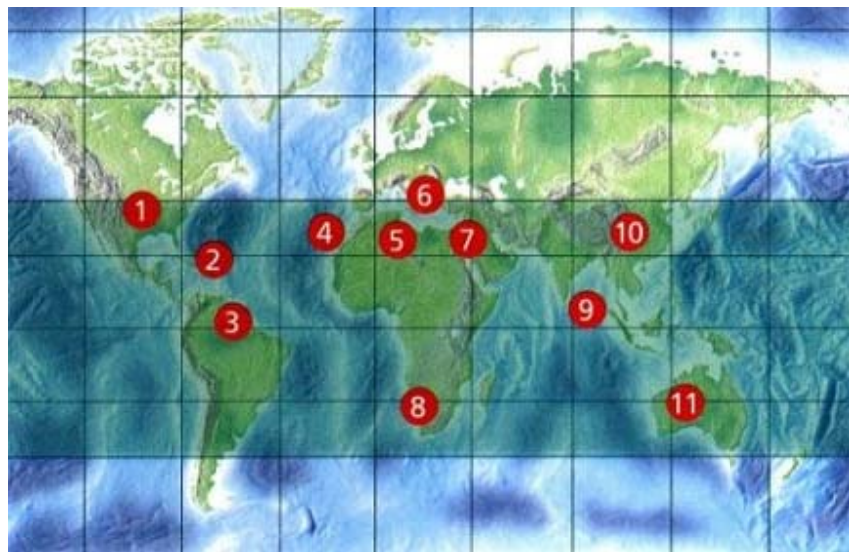


Barbadensis Miller” that is used as a synonym. Aloe is supposed to be derived from the Arabic “*alloe*h” meaning “*bitter*” because of the bitter liquid found in the leaves. Vera, which means “true” in Latin, was added to this particular specimen in order to distinguish its primacy among the aloe plants. And only the authentic “*Aloevera*” provides the potent therapeutic effects, which nature has built in it.

Aloe is native to the drier parts of Africa, especially South Africa's Cape Province and the mountains of tropical Africa. It is also grown in other subtropical and tropical locations, including South America and the Caribbean. It needs this warm climate as it cannot survive freezing temperatures.

The Aloe plant is considered to be out of Liliaceae and Aloaceae family, which has numerous different species. Among this species, there is only one variety that has a legendary medical reputation dating back thousands of years, it's the “*Aloe Vera*” that has another botanic name which is

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Aloe vera *barbadensis* has her cactus-look thanks to the dry area she grows in. Because of the long periods without rain and strong sun shine she needs to build up her own water- and nutrition storage in order guarantee a proper supply.

Accordingly to a report on aloe worldwide cultivation published by IASC (International Aloe Science Council), there are close to 23,600 hectares of aloe being cultivated at worldwide level, whereas 19,100 of them are located in the Americas. This report gives the pole position in 2004 data to Mexico with 10,700 hectares, then to Dominican Republic with 3,500 and after that, Venezuela with 3,400 hectares. But numbers are growing at an interesting pace.

ALOEVERA-BOTANICAL ASPECTS

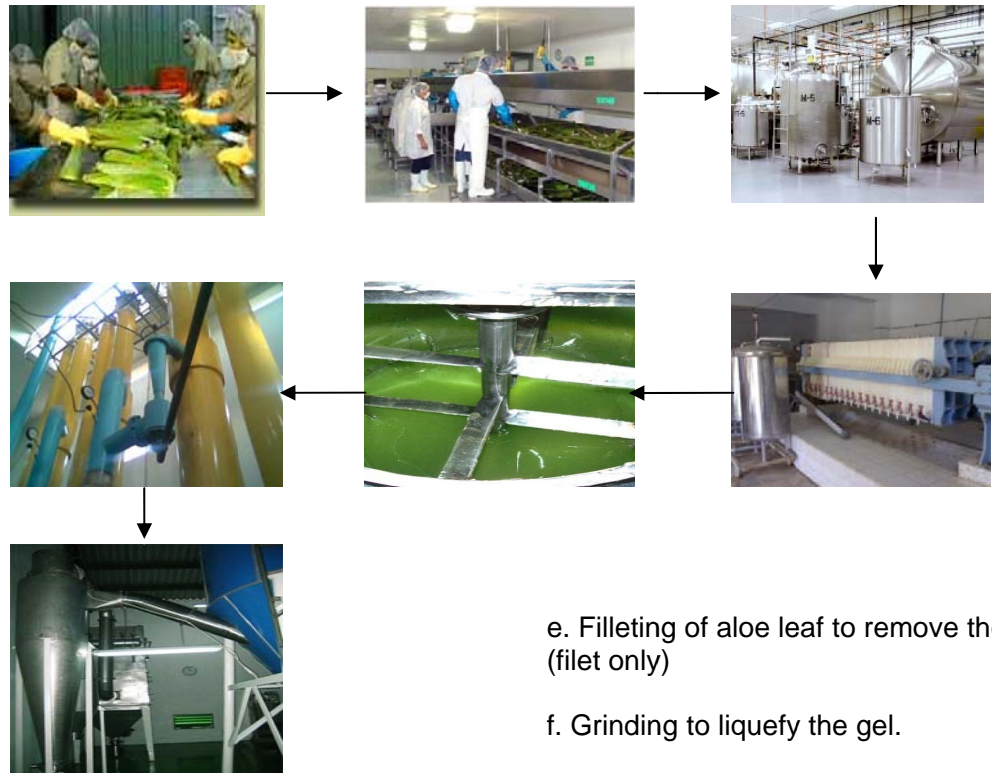
Aloe grows to the height of 60 to 90 cm /1,5 m. Almost everything are leaves that sit on a strong fibrous root close to the ground. Her 40 to 60 cm long, pale green, fleshy, thick, elongated and spiny leaves build a leaf rosette and are 6 to 10 cm wide at the sprout. The connection to the Tree Lilly does go unnoticed during the springtime, when aloe plants blossom with beautiful tubular shaped yellow to purplish drooping flowers.



The fruit is a triangular capsule containing numerous seeds. *Aloe Vera* can be harvested by hand, with the leaves cut off at the base of the plant.

You can usually harvest aloe plants 4 times per year. You should take around three leaves per plant. This makes a total of 12 leaves per plant per year. At an average weight of 1 kg you can expect an annual return of 60,000 kg of aloe leaves per acre This depends on whether you are hand filleting, the skill of your employees, whether you are using an automated extraction machine, however you should yield at least 43 to 45 percent from a 1 kg aloe leaf.

ALOEVERA PRODUCTION PROCESS



e. Filleting of aloe leaf to remove the gel. (filet only)

f. Grinding to liquefy the gel.

g. Pulp separation to remove the cellulose pulp.

h. Stabilization of aloe gel to achieve microbial protection.

i. Charcoal Decolourization to remove colour, and odour.

j. Filtration to remove charcoal.

k. HTST or Vat Pasteurization to provide final bacterial stabilization.

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You will basically need the following:

a. A soaking tank to loosen the dirt from the leaf.

b. An aloe leaf washing machine or hand washing station to wash each individual leaf.

c. A sanitizing rinse to sterilize the leaves.

d. Trimming the aloe leaf to remove the ends and sides. (Filet only)

Production option

According to the favored end product different production steps can be chosen/added

Cost efficient start up

One benefit of Aloe processing is, that you can start with a cost efficient production line, which can be extended easily in regards to capacity and product options (aloe powder, aloe drinks, Aloe Tablets etc.)



ALOEVERA APPLICATIONS

As already mentioned *Aloe Vera* is found/ reported to have various medical and cosmetic properties. Today a lot of *Aloe Vera* products are available in the market.

In order to get a good overview the products can be divided into three groups:

1. Health/ Medical Products: You can find Aloe as an ingredient in many different pharmaceutical products for many different treatments. But Aloe is also an extraordinary and a valuable food supplement

- a. Pharmaceutical products
- b. Tonic
- c. Tablets/ Capsules/ Fizzy tablets
- d. Salve (for protection of delicate and irritated skin from body fluids and enzymatic drainage)
- e. Supplements
- f. Juice
- g. Tablets/ Capsules/ Fizzy tablets



2. Cosmetics Products: Aloe products are considered to be real liquidity oases. They provide the skin with the needed liquidity and coolness. Below you can find only few examples of the wide pallet of cosmetical products:

- a. Shampoo
- b. Hair conditioners/ masks
- c. Hair tonics, dressings, etc
- d. Eyeliner
- e. Sun blocker cream/ lotion/ spray



3. Food: The benefits of *Aloe Vera* can also be experienced by drinking tea or drinks with different flavour

- a. Instant drink powder (different flavours: Banana; The benefits of *Aloe Vera* can also be experienced by drinking tea or drinks with different flavour straw berry, vanilla; coffee; etc.)
- b. Tee
- c. Drinks (with different flavours: Apple; peach; etc.)



Different product options

Aloevera Production is a multifunctional plant which can be processed into various end products

ALOEVERA MARKET

BOTANICAL EXTRACT DEMAND IN COSMETIC AND TOILETRIES FROM 1989 TO 2008

ITEM	DEMAND VALUE (MILLION US \$)			
	1989	1993	1998	2008 *
ALOE EXTRACT	38	46	63	115

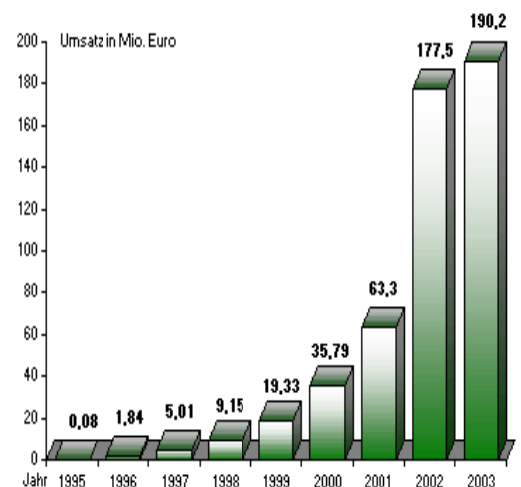
Continuously growing market

The rapidly and constantly growing healthcare market especially the self treatment sector based on herbal medicine and cosmetics, leads also to an rising demand of aloe products.

The world wide cultivation of *Aloe Vera* is estimated to have a volume of 23,589 hectares. The industry size for aloe raw material is estimated to be about \$125 million dollars. The volume of the industry for finished products containing *Aloe Vera*, is alleged to be around \$110 billion dollars.

The number of suppliers and distributors has grown significantly in the past few decades. And many of them publish quite good sales growth.

World market prices for raw *Aloe Vera* products differ extremely according to the application and quality. Although *Aloe Vera* processing industry is concentrated in the middle and south of the American continent , 1 kg spray-dried *Aloe Vera* powder 200x (used as benchmark) from that region costs up to 90 \$. As an example for the rapid growth please have a look beside where the tremendous increase of the aloe market in Germany is shown.





ALOE PROCESSING-ENSYMM SERVICE

Ensymm can help you to plan and realize your Aloe Vera processing line project. With regards to this look at the ensymm profile, ensymm benefits and ensymm project roadmap which are as follows.

Profile:

Ensymm is a consulting company based in Duesseldorf/Germany. Our company offers Technology Transfer, Project Management and Consulting for private investors, companies, governmental organization and universities. We have a strong network of more than 35 suppliers in the EU, Middle East, South America and Asia and 15 cooperation offices worldwide. Beside our expertise for managing your project puzzle, we are specialist for Turnkey Plants (Transfer of Technology and Equipment) and Outsourcing. The transfer of technology contains the areas:

- Biotech processing
- Pharmaceutical processing
- Chemical processing
- Food processing

So we have the pleasure to provide you with new and fresh ideas for preparing your company for future challenges and developing its marketing and sales strategy for the global competition.



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ALOE PROCESSING-ENSYMM SERVICE

Benefit of Ensymm Project Management:

Experience

Besides our own experience you can benefit from our network which offers different competences and different standards according to your requirements

Multiple competences

Based on the different core competences of our employees and partners we are able to serve you beyond the project execution – for example with the distribution of your products.

- Client designed offer
- Local support
- State of art Technology
- Feasible production capacity
- Offers, designed for the budget of investors
- Competence team for:
 1. Business and scientific issues
 2. Supervising for engineering, installation and production
 3. Inspection and guarantee for used plants
 4. Coordination of the Project from A-Z
 5. Quality control
 6. Advisory related to the project
 7. After sales services
- Project coordination from A-Z
- Support for raw material and technical services



ALOE PROCESSING-ENSYMM SERVICE

Aloe related Ensymm project management:

Ensymm provides you an Aloe specified service to realize your project on turnkey or part key base. We have several engineering companies and manufacturers from Europe/Southamerica/Asia (worldwide reference projects are available for your visit) within our network. Therefore we can select the perfect team for every capacity and quality standard (e.g. HACCP- Hazard Analysis Critical Control Point) as required by the target market.

As an additional option (recommended by ensymm) a technical engineering team can be involved. It will check all equipments/processes preliminary and during the project execution to give the client the highest security.

Meetings with our manufacturers and also a site visit at an Aloe processing plant will be arranged by ensymm.

Beyond the project execution the client can also benefit from our after sales services. Beside the line we are also able to provide complete components for the production of Aloe products (e.g. chemicals like stabilizers) throughout our network of suppliers. Further ensymm would be glad to support you regarding the marketing and distributing of your Aloe products.



Several Benefits

By providing a bunch of benefits you are able to enhance the chances of a successful project execution and a higher profitability



ALOE PROCESSING-ENSYMM SERVICE

Roadmap up to project execution

1. Our email with a short introduction along with an abstract and general budget plan
2. Signing a MOU
3. Delivery of a detailed proposal with a list of equipment, machinery, raw material, general feasibility calculation and references.
4. Meeting between client and our supplying/technology team
5. Further decisions for signing a project contract
6. Signing the supplier contracts

Structured approach

As you can see beside, ensymm follows a structured approach to the client and the project itself

