

## Entrepreneur India

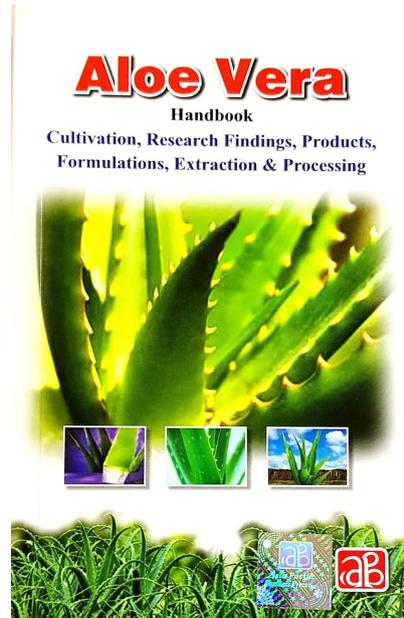
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## Aloe Vera Handbook Cultivation, Research Finding, Products, Formulations, Extraction & Processing

|                     |                                  |
|---------------------|----------------------------------|
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### Description

Aloe Vera is a semi tropical plant. It is one of the oldest known medicinal plants gifted by nature, Aloe Vera often called Miracle plant known by many names. It contains more than two hundred tonic ingredients including essential amino acids, enzymes, glucose and more. Also contains the most essential components required by the human body. It is grown wild in hedge rows in dry soil conditions and almost all parts of India. It can be grown even under constant drought conditions. Commercial cultivation and utilization of this plant with the application of technology can be of great value. There are various benefits of this plant; it is used to support the natural healing of skin that has been damaged. A common usage is to sooth sunburned skin. Aloe Vera can also be made into juices, gels, powders and is often added to products. For example it can be found in cosmetics, shampoos, lotions and many other common household Aloe Vera products. The many benefits of Aloe Vera are not fully researched as of yet. Processing of Aloe Vera gel derived from the leaf pulp of the plant, has become a big industry worldwide due to the application in the food industry. It has been utilized as a resource of functional food, especially for the preparation of health drinks which contain Aloe Vera gel and which have no laxative effects. Given the exponentially growing demand for it in the international market, it presents the finest commercial opportunity among the various medicinal plants. Also, India is among the few countries gifted with the unique geographical features essential for cultivation of Aloe Vera and other high potential medicinal plants.

Some fundamentals of this book are chemical investigations of different parts of the leaf, agro technique: Aloe Vera, economics of cultivation per hector, aloe (Aloe Vera) investment opportunity, specialty raw material market for cosmetics/toiletries, strategy for capacity creation and marketing, influence of Aloe Vera on the glycol amino glycans in the matrix of healing dermal wounds in rats, effects of low molecular constituents from Aloe Vera gel on oxidative metabolism and bactericidal activities of human neutrophils, Aloe Vera & aids research, anti diabetic activity of aloes: preliminary, aloe reduction in ulcers, erosions & hemorrhages, extraction process, processing steps, extraction process of aloe gel and powder etc.

This book highlights such technical details to guide and encourage new entrepreneurs. It is very useful book for consultants, farmers, students of Agricultural universities, libraries etc.

## **Content**

CULTIVATION, RESEARCH FINDINGS, PRODUCTS,  
FORMULATIONS, EXTRACTION & PROCESSING

1. Historical Developments

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Anti-inflammatory findings

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Global Scenario

International Aleo Science Council

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Speciality raw material market for cosmetics/toileteries

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Scenario

Important Overseas Players

Forever living

Santrel international

Selected Indian Players

Emami

Siri Agritech

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Indian Skin Cream Market

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Strategy for Capacity Creation and Marketing

6. Research Findings

Aloe vera and the inflamed synovial pouch model

Isolation of a stimulatory system in an Aloe extract

Aloe vera as a biologically active vehicle for hydrocortisone acetate.

The stimulation of postdermabrasion wound healing with stabilized aloe vera gel-polyethylene oxide dressing

Aloe-emodin effects on arylamine N-acetyltransferase activity in the bacterium *Helicobacter pylori*.

Influence of aloe vera on the healing of dermal wounds in diabetic rats.

Influence of Aloe vera on the glycosaminoglycans in the matrix of healing dermal wounds in rats.

Immunochemical distinction of Aloe vera, *A. arborescens*, and *A. chinensis* gels.

*Aloe barbadensis* extracts reduce the production of interleukin-10 after exposure to ultraviolet radiation.

Influence of Aloe vera on collagen characteristics in healing dermal wounds in rats.

Influence of Aloe vera on collagen turnover in healing of dermal wounds in rats.

Studies of aloe. VI. Cathartic effect of isobarbaloin.

[The action of an aqueous extract of Aloe barbadensis Miller in an in-vitro culture of Trichomonas vaginalis].

Biotherapy with the pineal immunomodulating hormone melatonin versus melatonin plus aloe vera in untreatable advanced solid neoplasms.

Nitro chemopreventive effects of plant polysaccharides (Aloe barbadensis Miller, Lentinus edodes, Ganoderma lucidum and Coriolus versicolor).

The therapeutic potential of Aloe Vera in tumor-bearing rats.

In vitro angiogenic activity of Aloe vera gel on calf pulmonary artery endothelial (CPAE) cells

Isolation of cDNA for an NADP-malic enzyme from Aloe arborescens

Prevention of ultraviolet radiation-induced suppression of accessory cell function of Langerhans cells by Aloe vera gel components

Beneficial effect of Aloe on wound healing in an excisional wound model.

Acceleration of the alcohol oxidation rate in rats with aloin, a quinone derivative of Aloe.

Activation of a mouse macrophage cell line by acemannan: the major carbohydrate fraction from Aloe vera gel.

Isolation of a cDNA for a phosphoenolpyruvate carboxylase from a monocot CAM-plant, Aloe arborescens: structure and its gene expression.

A purgative action of barbaloin is induced by Eubacterium sp. strain BAR, a human intestinal anaerobe, capable of transforming barbaloin to aloe-emodin anthrone.

Studies of aloe. V. Mechanism of cathartic effect.

Studies of aloe. IV. Mechanism of cathartic effect.

Prevention of ultraviolet radiation-induced

suppression of contact and delayed hypersensitivity by Aloe barbadensis gel extract.

Rhein and aloë"emodin kinetics from senna laxatives in man.

Pharmacokinetic"metabolic studies with 14C-aloë emodin after oral administration to male and female rats.

Some pharmacological actions of aloë extracts and Cassia abbreviata on rats and mice.

Effects of low molecular constituents from Aloe vera gel on oxidative metabolism and cytotoxic and bactericidal activities of human neutrophils

Studies of aloë. III. Mechanism of cathartic effect.

An anti-complementary polysaccharide with immunological adjuvant activity from the leaf parenchyma gel of Aloe vera.

[Effects of aloë extracts, aloctin A, on gastric secretion and on experimental gastric lesions in rats].

Effect of water extracts of aloë and some herbs in decreasing blood ethanol concentration in rats.

Aloë vera

Comparative evaluation of aloë vera in the management of burn wounds in guinea pigs.

The glucomannan system from Aloe vahombe (liliaceae).

The Aloe vera phenomenon: a review of the properties and modern uses of the leaf parenchyma gel

7. Clinical Trails

Heart Disease

Prevention of Atheromatous Heart Disease

Lowered Blood Pressure

Immunological Benefits : Cancer, Tumours, HIV & AIDS

A Study of 29 AIDS Patients

Cancer Research

Aloë Vera & AIDS Research

Aloë vera may mimic azt without toxicity

Antimetastatic Properties of Aloë Juice

Aloemannan, Significant Antitumor Efficacy

Antimutagen of Aloë plants

Diabetes

Aloe vera & gibberellin, anti-inflammatory activity in diabetes

Normalized Blood Glucose Level

Antidiabetic activity of Aloes: preliminary clinical & experimental observations

Aloe vera-anti-edemic & analgesic activity in diabetes

Gastrointestinal Disorders

Colitis & Crohn's Disease

Research - Gastric Ulcers

Research - Ulcers, Stress Related

A double-blind trial of a celandin, Aloe Vera & psyllium laxative preparation in adult patients with constipation

Studies of Aloe III. Mechanism of Cathartic Effect

Aloe Vera to treat gastrointestinal Problems

Research - Duodenal Ulcers

Aloe Reduction In Ulcers, Erosions & Hemorrhages in the Stomach

Radiation, Burns & Frostbite

Aloe vera gel hindered wound healing of experimental second-degree burns: a quantitative controlled study.

Experimental & clinical observations on frostbite

Alvigel as a therapeutic agent in the treating of radiation burns

Beneficial effects of aloe in wound healing

The external use of Aloes

Treatment of experimental frostbite with pentoxifylline & Aloe vera cream

Psoriasis

Management of psoriasis with Aloe vera extract in a hydrophilic cream: a placebo-controlled, double-blind study.

Skin Disorders/Inflammation

Anti-inflammatory activity of Aloe vera against a spectrum of irritants

Wound healing. Oral and topical activity of Aloe vera.

Processed Aloe vera administered and topically inhibits inflammation

Uses of Aloe in treating leg ulcers & dermatosis

Anti-inflammatory and wound healing activity of a growth substance in Aloe vera.

Anti-inflammatory & wound healing properties of Aloe vera

Effects of topical medications on the healing of open

pad wounds in dogs

Antiinflammatory activity of extracts from Aloe vera gel.

Skin Disorders Virus: Bacteria, Fungi & Parasites

Dental Disorders

Aloe Vera Gel Toothpaste

Aloe in Dentistry

Why Aloe may work

Use of Whole-Leaf Aloe

8. Patent

U.S. Patent 6, 027, 728 (2000)

Herbal Skin regeneration and method

A method for skin regeneration comprising

Description

Background of the Invention

Summary of the Invention

Detailed Description of the Invention

U.S. Pat. 6, 030, 622

Herbal Extract composition and method

(2000) with immune boosting capability

Background of the Invention

Field of the Invention

Description of the Background Art

Summary of the Invention

Detailed Description of the Preferred Embodiments

Extract Preparation

Preparation of Extract of ARUM ALOE

Preparation of Extract of POMEGRANATE.

Preparation of Extract of TEA.

Preparation of Extract of HIBISCUS.

Preparation of Combined Extracts of ARUM and POMEGRANATE

Preparation of Combined Extracts of ARUM, POMEGRANATE, TEA and HIBISCUS

In Vitro Blast Transformation of Lymphocytes

From Normal Patients

In Vitro Blastogenesis of Peripheral Blood Lymphocytes from Patients With Renal Failure

Stimulation of Cytokine Production in

Normal Persons

In Vitro Inhibition of gp 120 Binding to MT-4 Cells Measured with OKT4A Monoclonal Antibody.

In Vitro Inhibition of gp 120 Binding to MT-4 Cells Measured with Anti-gp 120

Monoclonal Antibody.  
Chemical Analysis of Combined Extracts  
Aloe vera gel toothpaste  
United States Patent 5, 294, 434 March 15, 1994  
Summary of Invention  
Detailed Description  
United States Patent 5,989,560  
November 23, 1999  
Herbal intestinal tract cleanser  
Field of the Invention  
Background of the Invention  
Summary of the Invention  
Detailed Description of the Preferred Embodiments  
Aloe vera ointment  
United States Patent 4,725,438 February 16, 1988  
Field of the Invention  
Background of the Invention  
Summary of the Invention  
Objects of the Invention  
Description of the Preferred Embodiment  
Summary of the Achievements of the Objects  
of the Invention  
United States Patent 5,288,492 February 22, 1994  
Decongestant composition containing aloe vera  
Background of the Invention  
Field of the Invention  
Description of the Prior Art  
Summary of the Invention  
Detailed Description of the Invention  
United States Patent: 6,004,558  
Technical Field  
Background of the Invention  
Summary of the Invention  
Detailed Description of the Invention  
Separation of primary isoflavones using  
chromatographic techniques  
Method for extraction and removal of genistein,  
daidzein, formononetin and biochanin  
Anti-cancer activity of isoflavone free cell extracts  
Treatment of a sixty two year old male diagnosed  
with prostate cancer

Herbal Remedies  
Summary of the Invention  
Brief Description of the Drawings  
Detailed Description of a Preferred Embodiment  
Herbs and Preparation of Formulations  
Patient Selection  
Herbal Preparation and Dosage  
Results of the Study  
Effect of Discontinuing Usage of the Present Invention  
Conclusion  
United States Patent 5,904,924 May 18, 1999  
Green nutritional powder composition  
Summary of the Invention  
Detailed Description of the Present Invention  
U.. Pat. 5,876,728 (1999)  
National Composition extracted from Plants  
used in the treatment of Cancer  
Background of the Invention  
Objectives of the Invention  
Summary of the Invention  
Detailed Description of the Invention  
Test Substances  
Cell Culture  
Cytotoxicity Assay  
Fresh Tumor Specimens  
Turmeric & Aloe Vera for treating health ailments  
Summary of the Invention  
U.S. Pat. 4591, 387 (1986)  
Aloe Vera Leaf Processor  
Brief Description of the Invention  
Detailed Description of the Invention  
U.S. Pat. 5, 215, 760 (1993)  
Detailed Description of the Preferred Embodiments  
U.S. Pal 4,309,180 (1983)  
Cosmetic facial preparation contraining aloe vera  
Detailed Description of the Preferred Embodiment  
U.S. Pat. 6,013, 259 (2000)  
Aloe Vera Ophthalmic Solution  
Background of the Invention  
Brief Summary of the Invention  
Detailed Description of the Invention

Allantoin  
Extract of Lavender  
Topical Compositions  
Pharmaceutical/Cosmetic Compositions  
Cleaning Compositions  
Weighing  
Washing  
Filleting  
Grinding  
Homogenization  
pH Adjustment  
Selective Precipitation  
Centrifugation  
Weighing/Storage  
Tray loading  
Drying  
Milling  
Blending  
Storage and Exportation  
Moderate or Medium Filtration  
(Filtration Using A Medium Filter)  
Fine Filtration (Filtration Using A Fine Filter)  
Ultrafiltration/Concentration  
Ultracentrifugation  
Low Speed Centrifugation  
Dialysis  
Anion Exchange Chromatography  
Size Exclusion Chromatography  
Step-Wise Filtration  
Preparation of Bulk Pharmaceutical  
Mannan (â€œBPMâ€ )  
Pilot Scale Sizing of Bulk Pharmaceutical  
Mannans by Ultra-filtration  
Purification and Depyrogenation of FBA using  
Chromatography with subsequent Molecular  
Sizing (DFBA)  
Anti Viral Effects of Different Factors Obtained by  
Chromatographic Separation of FBA  
Cells and Culture media:  
Reagents and Preparation:  
Protocol of Mouse Pulmonary Inflammation

Model

Myeloperoxidase (MPO) Assessment of Lavage Fluid and Tissues

Lavage Fluid

Tissue MPO Assessment

MPO Reaction

Mouse Croton Oil Ear Inflammation Model

Protocol for Cytokine Analysis from Macrophages

Mouse TNF- $\alpha$  Assay In Biological Fluids

Centrifugation of Suspension of Results Obtained from Bioassays used to Evaluate Different Factors Results from Factors using Methods as Described

IL-6 Production:

IL-1 $\alpha$  Productions:

Microparticulate Factor From FBA and No Production

Macrophage Activation and Anti-inflammatory Activities

Epithelial Cells (EC) Proliferation

IL-6 Assay

RAW Cells Secreted Interleukin-6 in Response to FBA

MF Stimulated IL-6 Production

Anti-Inflammatory Activities of Soluble Factors

Filtration with 0.1  $\mu$ m Filters of Microparticle Factors

Factors of FBA Sized Filtration through Syringe Filters of Various Pore Sizes

Carbohydrate Content in the Filtrate

Factors Sized and Isolated by 5  $\mu$ m Filtration and No Assay

Topical Anti-Inflammatory Activity of Freeze-Dried Aloe Vera Extract and FBA

Other Related Applications

Summary of the Present Invention

9. Herbal Formulations

Basliqun Kabir

Preparation

Administration

Uses and indications

Sufuf Dama

Hab Hiltit

Hab Soranjan  
Hab Shabyar  
Halwa-i-ghaikwar  
Qurs Tankar  
Kuhl-ul-jawahar  
Kuhl Roshania  
Kushta Abrak Safaid  
Kushta Busud  
Kushta Khubs-ul-hadid  
Kushta Khar Mohra  
Kushta Tila Kalan  
Kushta Faulad  
Kushta Gaodanti  
Kushta Nuqra  
Majun Talkh

## 10. Cultivation Practices

General details  
Origin and distribution  
Propagation  
Harvest  
Yield

## Cultivation Practices

Soil  
Climate  
Land Preparation  
Propagation  
Planting  
Manuring  
Irrigation  
Weeding

## Diseases and Management

Harvesting the Yield

## 11. Extraction Process

Organ used for manufacture  
Timing of Leaf Harvest  
Leaf Harvesting and Handling  
General process outline for Herbal extract  
Cleaning and size reduction:  
Solvent extraction:Â  
Solvent recovery  
Spray dried extract

Soft extract  
Phytochemicals:  
Effluent treatment:  
Aloe Vera Gel Process  
Highlights  
Guidelines for production  
Process outline  
Process conditions:Â  
Advantages of wholeleaf cold process  
Strategy for process control  
Patent details  
Extraction Process  
Processing Steps  
Extraction process of Aloe Gel and Powder  
12. Patents and Know-how  
Description  
Background of the Invention  
Brief Summary of the Invention  
Detailed Description of the Invention  
Preparation of the Aloe Vera gel eye drops:  
Summary of the Invention  
Objects of the Invention

## About Niir

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