

LIST OF PUBLICATIONS IN SCIENTIFIC JOURNALS

1. Rajendran, A, V. Narayanan and I.Gnanavel. 2007. Evaluation of Therapeutic Efficacy of Aloe vera Sap in Diabetes and Treating Wounds and Inflammation in Animals. Published in Journal of applied Sciences Research, 3(11): 1434-1436, 2007 © 2007 Insinet Publication.
2. Rajendran, A, V. Narayanan and I.Gnanavel. 2007. Separation and Characterization of the Phenolic Anthraquinones from Aloe Vera . Published in Journal of applied Sciences Research, 3(11): 1407-1415, 2007 © 2007 Insinet Publication.
3. Rajendran, A, V. Narayanan and I.Gnanavel. 2007. Photochemical and Electrochemical Stabilities of Aloe Vera Sap. Published in Journal of applied Sciences Research, 3(12): 1871-1878, 2007 © 2007 Insinet Publication.
4. Rajendran, A, V. Narayanan and I.Gnanavel. 2007. Study on the Analysis of Trace Elements in Aloe vera and Its Biological Importance. Published in Journal of applied Sciences Research, 3(11): 1476-1478, 2007 © 2007 Insinet Publication.
5. Rajendran, A and I.Gnanavel. 2007. Agro- Techniques for Production of Medicinal Plant Aloe vera L. Published in Green farming, 1(2): 52-53 (2007) Jodhpur, Rajasthan.
6. Rajendran,A., I.Gnanavel and R.Renalto. 2007. Aloe vera: A new host for Erwinia chrysanthemi in Tamil Nadu. Published in Green farming, 1(3) : 40-41 (2007) Jodhpur, Rajasthan.
7. Rajendran,A., G. Sobiya and I.Gnanavel.2007. Study on the Effective Supplementation of Aloe vera gel antacid to Peptic Ulcer Patients. Accepted for publication in Research Journal Medical and Medicinal Sciences, INSInet publication.
8. Rajendran, A and I.Gnanavel. Effect of Organic Manures and Spacing on Aloe vera L. published in Journal of Medicinal and Aromatic Plant Sciences, (JMPS) NO: 1 volume 30 March (2008) 40-42 CIMAP (CSIR), Lucknow, India
9. Rajendran, A study on different aloe vera gel process technologies article sent for publication Journal of applied Sciences Research, Insinet publication
10. Rajendran, A and I.Gnanavel. 2008. Commercial Production of Medicinal Plant Aloe vera L. Published in Herbal Tech Industry 4(9): 15-16 (2008) Chennai, India.
11. Rajendran, A and I.Gnanavel. 2008. Erwinia chrysanthemi: A plant pathogenic bacteria in Aloe vera L. Published in Herbal Tech Industry 4(10): 20-21 (2008) Chennai, India.
12. Rajendran, A and I.Gnanavel. 2008. Commercial production of Medicinal Herb Coleus aromaticus (Benth) Published in Herbal Tech Industry 4(112): 12-13 (2008) Chennai, India.
13. Rajendran, A and I.Gnanavel. 2011 Commercial uses of Natural Color and Production of Annatto (Bixa Orellana L.) Published in Herbal Tech Industry Vol 8, Issue 01, 9-11(2011) Chennai, India.
14. A.Rajendran, R.SudeshRaj, Sureshkumar, "Potential antidiabetic activity of medicinal plants –A short "The JOURNAL OF Phytopharmacology and (Pharmacognocny and Phytomedicine research 2018:7(5):456-459
15. A.Rajendran, R.SudeshRaj, Sureshkumar, "Phytonutrition: Moringa Oleifera leaf extracts as incredible health super food supplement "The Pharma Innovation Journal 2019:8(2):29-33.
16. A.Rajendran, R.SudeshRaj, Sureshkumar, "Phytonutrition:Flax seeds a vegetarian source of nutraceutical supplement for complete health and wellness "Indo American Journal of Pharmaceutical Sciences" IAJPS 2018,05(11),1-4.
17. A.Rajendran, R.SudeshRaj, Sureshkumar, "Phytonutrition: Stress and Relaxation dietary health food supplements "The Pharma Innovation Journal 2019:8(5):799-802.
18. A.Rajendran, M.Helan Soundarya Rani, A.Murugan "Seaweed nutraceutical as natural supplement for iodine and other mineral deficiency disorders" Seaweed Research and Utilisation-Vol.40(2),July-December 2018,pp 43-48-ISSN:0971-7560.
19. A.Rajendran, R.SudeshRaj, Sureshkumar, Curcumin Loaded nanoparticles and its potent anti cancer activity: short review June-2019JETIR research Vol.6, Issue6.
20. A.Rajendran, G.Sobiya, I.Gnanavel, Study on the Effective Supplementation of Aloe vere Gel Antacid to Peptic Ulcer Patients research Journal of Medicine and Medical Sciences, 3(2): 132-134, 2008, INSInet Publication.
21. V.Narayanan, A.Rajendran, I.Gnanavel, Study on the Analysis of Trace Element in Aloe vera and Its Biological Importance Journal of Applied Scinces Research, 3(11): 1476-1478, 2007, INSInet Publication.
22. A.Rajendran, I.Gnanavel, Cultivation Technologies for AloeVera L. Journal of Herbal Scinces and Technology, Vol.8, Issue6, June 2011
23. A.Rajendran, Study on different Alo Vera gel process technologies in Phyto Pharma Industries Journal of HerbalTech , Vol.5, Issue01, November 2008.

Evaluation of Therapeutic Efficacy of *Aloe vera* Sap in Diabetes and Treating Wounds and Inflammation in Animals

Journal of Applied Sciences Research, 3(11): 1434-1436, 2007
© 2007, INSInet Publication

Evaluation of Therapeutic Efficacy of *Aloe vera* Sap in Diabetes and Treating Wounds and Inflammation in Animals

¹Rajendran, A, ²V. Narayanan and ¹I.Gnanavel

¹Life Care Phyto Remedies, Chennai 600 056, Tamilnadu, India.

²Department of Inorganic Chemistry, University Of Madras, Guindy Campus, Chennai-600 025,India.

Abstract: The experiment was conducted at Department of Inorganic Chemistry, University of Madras, Tamilnadu, India, to evaluate the therapeutic efficiency of *Aloe vera* sap in diabetic and treating the wounds and inflammation in animals. *A. vera* treated diabetic rats showed a marked increase in body weight, liver glycogen, decrease in blood glucose, urine sugar levels and serum lipids when compared to other groups. In wound healing experiment, the progress in the healing of the wound treated with phenolic anthraquinones of *A. vera* sap was faster than the untreated control.

Keywords: *Aloe vera* sap, therapeutic efficiency, diabetic, wound, inflammation, animals

INTRODUCTION

Aloe vera L. (*Aloe barbadensis* Miller) is an important medicinal plant belongs to the family Liliaceae. It has larger demands and is traded in medicinal drug markets of the world for flavouring liquid and a source of aloin (4.5 to 25 per cent). In recent times, herbal remedies are gaining their prominence, because of the observation that the efficacy of allopathic medicines such as antibiotics, which once had near universal effectiveness against serious infections is on the wane. Over the years, infectious agents have developed resistance to synthetic drugs and the herbs and their active constituents are now being increasingly used to treat various diseases. The ability of herbal medicine to affect body systems depends on the chemical constituents that it contains. Aloe products have long been used in health foods and for medical and cosmetic purposes. These products range from aloe drink to aloe gels, powders, capsules, creams etc. for both internal and external uses for a wide variety of indications. Aloe has a wide range of medicinal application such as wound healing effect, reduces blood sugar in diabetes, soothes burns, eases intestinal problems, reduces arthritic swelling, ulcer curative effect, stimulates immune response against cancer etc. Anthraquinones derivatives in *Aloe vera* gel play an important role in the treatment of tumors, diabetes, ulcer and cancer. *A. vera* appears to speed up the healing of damaged epithelial tissue in burns by providing essential micronutrients, an anti-inflammatory effect through the stimulation of skin fibroblasts [5]. Keeping the above facts in view, the present study was

conducted to find out the activity of *A. vera* sap in animals.

MATERIALS AND METHODS

The study was carried out at Department of Inorganic Chemistry, University of Madras, Guindy campus, Tamilnadu to evaluate the therapeutic efficiency of *A. vera* sap in diabetic and treating the wounds and inflammation in rabbits. Evaluation of the therapeutic efficacy of *A. vera* sap in the treatment of diabetes (Anti-Diabetic Activity) was done by the grouping of the animals as follows. Group-I (Normal Control), Group-II (Diabetic Control), Group-III (Diabetic rabbits treated with *A. vera* sap at 500g/kg/rabbit/day for 15 days), Group-IV (Diabetic rabbits treated with insulin (8 units/kg/day) for 15 days). After 15 days of treatment, the change in body weight, fasting blood glucose and urine sugar, serum lipid profiles, liver glycogen and vital enzymes including the enzymes of carbohydrate metabolism were determined by employing usual standard procedures. The therapeutic efficacy of *A. vera* sap in treating wounds and inflammation was evaluated by grouping the animals as follows. Group-I (Normal (both incision and excision)), Group II (Excision wound treated animals (2 x 4 cm²)), Group-III (Incision wound treated animals (2 x 2 cm²)). An excision wound was made by removing full thickness piece of skin from a pre-determined shaved area on the back of each rabbit. Experiments were designed and conducted as per CDCSEA and IAEC guidelines. The ointment used for topical application was formulated with 15 %

Corresponding Author: A. Rajendran, Life Care Phyto Remedies, No.14, Kamatchinagar, Second street, Ayyappanthangal, Chennai-56, Tamilnadu, India.
E-mail: rajendran_dr@hotmail.com

Separation and Characterization of the Phenolic Anthraquinones from Aloe Vera

Journal of Applied Sciences Research, 3(11): 1407-1415, 2007
© 2007, INSInet Publication

Separation and Characterization of the Phenolic Anthraquinones from *Aloe Vera*

¹Rajendran, A, ²V. Narayanan and ¹I. Gnanavel

¹Life Care Phyto Remedies, Chennai 600 056, Tamilnadu, India.

²Department of Inorganic Chemistry, University of Madras, Chennai-600 025, Tamilnadu, India.

Abstract: The experiment was carried out at Department of Inorganic Chemistry, University of Madras, Tamilnadu, India, to separate and characterize the phenolic anthraquinones from *Aloe vera*. Among the different forms of *A. vera*, *A. vera* sap contains more phenolic anthraquinones of 7.09 mg/g of lyophilizate than the remaining forms viz., aloe skin and aloe gel. All the three forms of aloe and the chromatographed fraction of aloe sap in five different solvent mixtures were characterized by infrared spectroscopy, fluorescence spectroscopy, mass spectroscopy and U.V. spectroscopy. Aloe sap fractions were all characterized by fluorescent spectroscopy and their emission wavelengths were comparable to that of phenolic anthraquinones.

Keywords: *Aloe vera*, phenolic anthraquinones, separation, characterization

INTRODUCTION

Aloe vera L. (*Aloe barbadensis* Miller) is an important medicinal plant belongs to the family Liliaceae. It has larger demands and is traded in medicinal drug markets of the world for flavouring liquid and a source of aloin (4.5 to 25 per cent). In recent times, herbal remedies are gaining their prominence, because of the observation that the efficacy of allopathic medicines such as antibiotics, which once had near universal effectiveness against serious infections is on the wane. Over the years, infectious agents have developed resistance to synthetic drugs and the herbs and their active constituents are now being increasingly used to treat various diseases. The ability of herbal medicine to affect body systems depends on the chemical constituents that it contains. Aloe products have long been used in health foods and for medical and cosmetic purposes. These products range from aloe drink to aloe gels, powders, capsules, creams etc. for both internal and external uses for a wide variety of indications. Aloe has a wide range of medicinal application such as wound healing effect, reduces blood sugar in diabetes, soothes burns, eases intestinal problems, reduces arthritic swelling, ulcer curative effect, stimulates immune response against cancer etc. Anthraquinones derivatives in *A. vera* gel play an important role in the treatment of tumors, diabetes, ulcer and cancer^[2]. Keeping this fact in view, the present study was undertaken to isolate the

phenolic anthraquinones from the methanolic extract from *A. vera* leaf gel.

MATERIALS AND METHODS

The study was carried out at Department of Inorganic Chemistry, University of Madras, Guindy campus, Tamilnadu, India, to separate and characterize the phenolic anthraquinones from the *A. vera* sap. The modified methodology has been adapted for the separation of phenolic anthraquinones. The phenolic anthraquinone derivatives are separated from aloe gel, aloe skin and aloe sap by TLC, HPLC and column chromatography. The methanolic extract was prepared by taking 10g. of aloe sap in 500 mL of methanol and stirred for 4-6 hr and the methanolic extract was filtered. The extract was subjected to rotary evaporation under vacuum at room temperature. The extraction was repeated for 5-6 times. The powdered aloe sap was subjected to TLC and HPLC to find out the various fractions in it. Then the fractions were separated by a modified elution technique. The same process was repeated for aloe skin and aloe gel. Elution technique was done by packing the brown coloured *A. vera* sap powder in a column by using 120-mesh column chromatography silica gel with hexane. Then the column was eluted in succession with ethyl acetate (1.5 l), ethyl acetate/acetone (4:1, v/v; 1 l), ethyl acetate/acetone (3:1, v/v; 1 l), acetone (1 l), and methanol (1.5 l). Each elute was separately

Corresponding Author: A. Rajendran, Life Care Phyto Remedies, No.14, Kamatchinagar, Second street, Ayyappanthangal, Chennai-56, Tamilnadu, India
Email: rajendran_dr@hotmail.com

Photochemical and Electrochemical Stabilities of Aloe Vera Sap

Journal of Applied Sciences Research, 3(12): 1871-1878, 2007

© 2007, INSInet Publication

Photochemical and Electrochemical Stabilities of Aloe Vera Sap

¹Rajendran, A, ²V. Narayanan and ¹I. Gnanavel

¹Life Care Phyto Remedies, Chennai 600 056, Tamilnadu, India.

²Department of Inorganic Chemistry, University Of Madras,
Guindy Campus, Chennai-600 025, India.

Abstract: The experiment was conducted at Department of Inorganic Chemistry, University of Madras, Tamilnadu, India, to determine the life time measurement, photochemical and electrochemical stabilities of *Aloe vera* gel and *A. vera* sap. Life time measurements for aloe sap before and after sun light irradiation and methanol fraction with excitation wavelength 450 nm, 475 nm and 500 nm, respectively at the excited state was observed in nano seconds. Aloe sap dissolved in methanol and subjected to U.V. light irradiation was observed to decrease the intensity of the peak at 416 nm. The cyclic voltammogram of all the fractions of aloe sap showed a cathodic peak around -0.55V and its corresponding anodic peak around -0.30V.

Keywords: Aloe gel, aloe sap, life time measurement, photo and electro chemical stabilities

INTRODUCTION

Aloe vera L. (*Aloe barbadensis* Miller) is an important medicinal plant belongs to the family Liliaceae. It has larger demands and is traded in medicinal drug markets of the world for flavouring liquid and a source of aloin (4.5 to 25 per cent). In recent times, herbal remedies are gaining their prominence, because of the observation that the efficacy of allopathic medicines such as antibiotics, which once had near universal effectiveness against serious infections is on the wane. Over the years, infectious agents have developed resistance to synthetic drugs and the herbs and their active constituents are now being increasingly used to treat various diseases. The ability of herbal medicine to affect body systems depends on the chemical constituents that it contains. Aloe products have long been used in health foods and for medical and cosmetic purposes. These products range from aloe drink to aloe gels, powders, capsules, creams etc. for both internal and external uses for a wide variety of indications. Aloe has a wide range of medicinal application such as wound healing effect, reduces blood sugar in diabetes, soothes burns, eases intestinal problems, reduces arthritic swelling, ulcer curative effect, stimulates immune response against cancer etc. Anthraquinones derivatives in Aloe gel play an important role in the treatment of tumors, diabetes, ulcer and cancer. Keeping the above facts in view, the present study was carried out to determine the exact

mechanism of actions and photochemical stabilities of Aloe vera gel and active ingredients.

MATERIALS AND METHODS

The study was carried out at Department of inorganic chemistry, University of Madras, Guindy campus, Tamilnadu, India, to determine the life time measurement, photochemical and electrochemical stabilities of *Aloe vera* gel *A. vera* sap. Life time measurements were carried out for *aloe vera* sap before sun light irradiation, *Aloe* sap after sun light irradiation and methanol fraction with excitation wavelength 450nm, 475nm and 500nm respectively, and the life time of the species at the excited state was observed in nano seconds. For photochemical study, Aloe sap was dissolved in methanol and kept in sunlight for 30 days and the changes in the solution were observed. Electrochemical properties of the *aloe vera* sap and their methanolic fractions were studied by using cyclic voltammetry in double distilled water containing 10^{-1} M sodium perchlorate as supporting electrolyte in the potential range 0 to 0.8 V. The measurements were carried out under oxygen free condition using a three-electrode cell in which a glassy carbon electrode was the working electrode, a saturated calomel electrode was the reference electrode and platinum wire was used as the auxiliary electrode. The cyclic voltammograms were recorded at different scan rates 25, 75, 100 mVs⁻¹.

Corresponding Author: A. Rajendran, Life Care Phyto Remedies, No.14, Kamatchinagar, Second street, Ayyappanthangal, Chennai-56, Tamilnadu, India.
Email: rajendran_dr@hotmail.com

Study on the Analysis of Trace Elements in *Aloe vera* and Its Biological Importance.

Journal of Applied Sciences Research, 3(11): 1476-1478, 2007

© 2007, INSInet Publication

Study on the Analysis of Trace Elements in *Aloe vera* and Its Biological Importance

¹Rajendran, A, ¹V. Narayanan and ²I. Gnanavel

¹Department of Inorganic Chemistry, University of Madras, Guindy Campus, Chennai-600 025, India.

²Life Care Phyto Remedies, Chennai 600 056, Tamilnadu, India.

Abstract: The role of some inorganic elements like vanadium, zinc, sodium, potassium, magnesium, aluminium, iron, nickel, cadmium, copper, cobalt and manganese in the improvement of impaired glucose tolerance and their indirect role in the management of diabetes mellitus, hypoglycemic, wound healing and anti-inflammatory effects are being used, which contain both organic and inorganic constituents. In the present study, an attempt has been made to analyze the inorganic elements present in the *Aloe vera* leaf gel. The concentration of various elements K, Mg, Na and Zn in the sample was more than 200 µg. The concentration of other elements analyzed in the sample decrease in the order Fe > Al > V > Cu > Mn > Pb > Ni > Co > Cd.

Key words: *Aloe vera* leaf gel, Trace elements

INTRODUCTION

Mineral elements serve as structural components of tissues and as constituents of the body fluids and vital enzymes in major metabolic pathways and are essential for the function of all cells^[3]. Their concentration in living tissues and the adult human requirement are somewhat lower than those of the bulk elements and they were not easily quantified by early analytical methods, hence the name trace elements^[6]. Growing concern with environmental factors in human health over the last few years has aroused renewed interest in the trace elements^[1]. Many herbs have been shown to have hypoglycemic action in animals and humans. However, the ultimate objective of their use is that they should interact directly with our body chemistry. They might be used in various forms like food and medicines, which contains both organic and inorganic constituents. Even trace elements play an important role in the formation of active constituents in medicinal plants. *Aloe vera* L. (*Aloe barbadensis* Miller) is an important medicinal plant belongs to the family Liliaceae. Aloe products have long been used in health foods and for medical and cosmetic purposes. These products range from aloe drinks to aloe gels, powders, capsules, creams, etc., for both internal and external uses for a wide variety of indications. Aloe gel contains phenolic anthraquinones, carbohydrate polymers and various other inorganic and organic compounds. Aloe has a wide range of medicinal applications such as wound healing effect, reduces blood sugar in diabetes, soothes burns, eases intestinal problems, reduces arthritic swelling, ulcer curative

effect, stimulates immune response against cancer, etc. Keeping the above facts in view, the present study was carried out to analyze the trace metalion content of *Aloe vera* gel.

MATERIAL AND METHODS

The study was carried out at Department of Inorganic Chemistry, University of Madras, Guindy campus, Tamilnadu to analyze the trace metals in the *Aloe vera* sap. The matured *Aloe vera* leaves were collected from three different locations of Tamilnadu.

Preparation of Ash: Mature, healthy and fresh leaves of *Aloe vera* having a length of approx 1.5-2 ft were washed with fresh water. The leaves were cut transversely into pieces. The thick epidermis was selectively removed. The solid gel in the center of the leaf was homogenized. The dry-ashing method was adopted by placing the properly dried and ground plant sample (100 g) into a vitresil crucible overnight in an electric muffle furnace, maintaining the temperature between 410 °C and 440 °C, because loss of zinc might occur at >450 °C and loss of potassium occur at >480°C. Also, ashing will destroy all of the organic materials present in the sample. The ash was removed from the crucible and allowed to dry in a desiccator. The yield of ash in gel powder was approx 3.25 g/100g.

Analysis of inorganic elements in *Aloe vera* leaf gel ash: Two grams of ash were digested with mixture of nitric acid, sulphuric and perchloric acid in the ratio of

Corresponding Author: A. Rajendran, Life Care Phyto Remedies, No.14, Kamatchinagar, Second street, Ayyappanthangal, Chennai-56, Tamilnadu, India
Email: rajendran_dr@hotmail.com

Agro- Techniques for Production of Medicinal Plant *Aloe vera* L.

AGRO- TECHNIQUES FOR PRODUCTION OF MEDICINAL PLANT , *Aloe vera* L.

A.RAJENDRAN¹, and I.GNANAVEL^{2*}

Life Care Phyto Remedies, Herbal Research Foundation, Ayyappanthangal, Tamilnadu-600 056, India

Abstract: *Aloe vera* is one of the medicinal plants and it can be grown successfully in wide range of soils from sandy coastal soils to loamy soils of plains and also over poor marginal soils. It is propagated either by root suckers or rhizome cuttings. The planting materials are planted during rainy season in July-August at spacing of 90 x 90 cm with two third of the material buried under the ground. The side shoots produced from the main plants should be frequently removed for increasing the main plant weight. After ten months, it gives around 55,000 kg of fresh leaves per hectare. Fresh leaves are sold for Rs.3/- to Rs.5/- per kg. It can be sold in the form of aloe or as a fresh leaf in the market.

Aloe vera L. (Syn: *A. barbadensis* Miller) is an important medicinal plant belongs to the family Liliaceae. It is a perennial, drought resistant, succulent plant with a whorl of elongated pointed leaves. *A. vera* has larger demands in traded in medicinal drug market of the world. *Aloe* contains cathartic anthra-glycosides as its active principle ranging from 4.5 to 25 per cent of aloin. Recent studies indicate that herbal remedies are gaining their performance, because of the observation that the efficacy of allopathic medicines such as antibiotics, which once had near universal effectiveness against serious infectious in on the wane. Over the years, infectious agents have developed resistance to synthetic drugs and the herbs and their active constituents are now being increasingly used to treat various diseases like ulcers, healing of cancer sores, burns, itching, fever, tuberculosis and paralysis. *Aloe* products have long being used in health foods and medicinal and cosmetics purposes (Morton, 1961). These products range from aloe drinks to aloe gels, powders, capsules, creams etc. for both internal and external uses for a wide variety of indications. Several patents have been registered especially for cosmetic uses of aloe leaves. Hence the cultivation of *A. vera* has acquired great commercial importance for medicinal products and cosmetics processing but information are scarce about agronomic management of this crop. Keeping this fact in view, this paper gives the agro-techniques for the production of aloe vera commercially under field conditions.

Status – India :

There was no organized cultivation in India. *Aloe vera* can be grown anywhere where there is hot and dry climate. Maharashtra, Karnataka, Gujarat, Andhra Pradesh, Tamilnadu, Rajasthan, Madhya Pradesh etc. are the states where *Aloe vera* is found to be grown. At present, around 2000-

2500 acres of land is under *Aloe vera* plantation in the country.

USES OF ALOE VERA

Medicinal value :

Aloe vera known to the mankind for more than 1000 years as a boon from Indian and African Farms. *Aloe vera* rich in nutrients, vitamins, enzymes and minerals. The list of trace elements present in *Aloe vera* leaf are presented in Table 1 (Rajasekaran et al., 2005). These are useful in eye diseases, tumors, spleen enlargement, liver complaints, vomiting, bronchitis, skin diseases, biliousness, asthma, jaundice, ulcer, lumbago, muscles, piles etc.

Use in modern Ayurveda :

Mucilaginous gel like pulp having typical smell used in various Ayurvedic and cosmetic products. After sun drying, pulp forms a lustrous dark brown to black hard bitter mass, known as "Elua or Boal". "Kumari-Asava" prepared from the juice of the leaves and other ingredients are given to improve conditions of general debility, cough, asthma, tuberculosis, etc. Ayurvedic preparations like 'Kumarica Vati' 'Kumari Paka' and 'Rajah Parvartini Vati' have been made from *Aloe* gel.

Table 1. Uses of *Aloe vera*

Cosmetic Applications	Medicinal Applications
Hair growth and scalp	Ulcers
Pimples and acne	Asthma
Skin and body care	Burns
Prevents wrinkle	Arthritis
Stretch marks from pregnancy	Diabetes
Removes dandruff	Constipation
Regenerates new cells	Sleeplessness
Protection against under arm odour	Cuts and wounds
Eye wrinkle remover	Digestive disorders

Climate :

It has wide adaptability and can grow in

various climatic conditions. It can be seen growing equally good in warm humid or dry climate. Annual rainfall ranges from as low as 350-400 mm to even as high as 1500-2000.

Table 2. Trace Elements in *Aloe vera* leaf

Elements	Concentration of elements (mg/2g)
Vanadium (V)	0.320
Manganese (Mn)	0.631
Copper (Cu)	0.150
Zinc (Zn)	0.378
Iron (Fe)	3.500
Magnesium (Mg)	0.157
Sodium (Na)	0.162
Potassium (K)	0.397
Chromium (Cr)	0.146
Calcium (Ca)	0.141

The plant is found to survive in cold temperatures also but however protection from severe frost is essential.

Soil:

Though *Aloe vera* can be cultivated on both irrigated and unirrigated land, it should be preferably grown on unirrigated land. The land should be free from water logging problems. It can grow successfully from sandy coastal soils to loamy soils of plains and also over poor marginal soils. The species tolerates higher pH with Na⁺ K⁺ salts. However, its growth is faster under medium fertile, heavier soils such as black-cotton soils. Higher foliage growth is observed in well drained, loam to coarse sandy loam soils with pH up to 8.5.

CULTIVATION TECHNOLOGIES

Propagation:

It is generally propagated by root suckers. For this purpose, medium sized root suckers are chosen and carefully dug out without damaging the parent plant at the base and directly planted in the main filed. The rhizome is also used as a propagative material for cultivating *A. vera*. The raised sand bed nursery was prepared to a height of 15 cm, width of 1 m and length of 10 m. The underground root of the mother plant were dug out and made into 6-7

¹ Director ² Scientist *Corresponding author

Aloe vera: A new host for *Erwinia chrysanthemi* in Tamil Nadu

Aloe vera : A NEW HOST FOR *Erwinia chrysanthemi* IN TAMIL NADU

A.RAJENDRAN¹, I.GNANAVEL² and R.RENALTO³

Life Care Phyto Remedies, Herbal Research Foundation, Ayyappanthangal, Chennai - 600056 (Tamil Nadu)

Abstract : In kharif season 2007, *Aloe vera* exhibiting bacterial soft rot symptom is observed in several commercial fields near Salem district in Western Tamil Nadu. Upon conducting pathogenicity tests, the bacterial pathogen *Erwinia chrysanthemi* is consistently reisolated from the infected plants. The bacterial disease caused by *E. chrysanthemi* was identified by biochemical tests explained by Bergeys and Schadd manual. The soft rot symptoms started as water soaked lesions at the base of the leaves. The Parenchymal tissue was completely changed into a slimy mass, erupting, due to gas formation, from fissures in the epidermis. The rotting progressed very fast and the whole plant died within two to three days. This disease was serious when abundant moisture was available through irrigation and/or rain.

Key words : *Aloe vera*, bacterial disease, *Erwinia chrysanthemi*, infection

Aloe vera L. (Syn: *A. barbadensis* Miller) is an important medicinal plant belongs to the family Liliaceae and has long been employed in medicinal preparation and for flavoring liquors and a source of drug 'aloin'. It contains 4.5 to 25 per cent aloin. In present days, herbal remedies are gaining their prominence, because of the observation that the efficacy of allopathic medicines such as antibiotics, which once had near universal effectiveness against serious infections is on the wane. Over the years, infectious agents have developed resistance to synthetic drugs and the herbs and their active constituents are now being increasingly used to treat various diseases. Aloe products have long been used in health foods and for medical and cosmetic purposes (Morton, 1961). These products range from aloe drinks to aloe gels, powders, capsules, creams, etc., for both internal and external uses for a wide variety of indications. Several patents have been registered especially for cosmetic uses of aloe leaves. Hence the cultivation of *A. vera* has acquired great commercial importance for medicinal products and cosmetics processing. When the *A. vera* is cultivated commercially as pure crop, *Erwinia* soft rot could be observed in the main field. The yield reduction in *A. vera* due to this disease was 40 to 45 percent. As of now no research work has been concentrated in isolating and identifying the plant pathogens from *A. vera*, in South India. Keeping the above facts in view, the study was carried out to isolate and identify the bacterial pathogen

E. chrysanthemi from *A. vera*.

MATERIALS AND METHODS

The study was carried out at Microbiology of Life Care Phyto Remedies Pvt. Ltd, Perambalur, Tamilnadu to isolate and identify the bacterial pathogen *E. chrysanthemi* from *A. vera*. The matured rotted leaf of *A. vera* collected and used for isolation and identification. The leaves were washed thoroughly under a fine moist of tap water. Leaf tissues were cut into small pieces (1-2 cm) with a sterile scalpel. The pieces of leaves were surface sterilized with 0.5 % sodium hypochlorite for 10 minutes, then rinsed in sterile distilled water (SDW) for another 2 minutes. Then the pieces of leaf were kept in tissue paper to absorb the water and to dry the leaf tissue. Three pieces of the leaf (500 mg) were ground in 5 ml of SDW using a mortar and pestle. The resulting suspension was streaked onto Nutrient Agar medium. Plates were incubated at 35°C for 48 hr. and discrete colonies were restreaked onto plates twice before being used for biochemical characterization.

Characterization : Cultures (48 hr old) on Nutrient agar subjected to various morphological and biochemical tests. The colony morphology was determined on Nutrient agar medium. Motility was determined by using hanging drop technique. Gram staining, H₂S production from cysteine, acid and gas production from glucose and lactose, oxidase, urease production and growth at 36°C were evaluated by as described by Schadd, 1980. Indole production, triple sugar iron,

methyl red test, voges proskauer test, casein hydrolysis and citrate production were determined as described in Bergeys manual (Krieg and Holt, 1984). Nitrate reduction was performed according to Lelliot and Stead, 1987. Sensitivity of the isolated bacterium to erythromycin, penicillin, norflaxacin, gentamycin and chloramphenicol (each at 15 µg/disc) were determined on Mueller-Hinton agar using Difo's antibiotic discs containing the respective antibiotics (15 µg/disc).

Pathogenicity tests : Four-month-old *A. vera* plants were used in the pathogenicity tests. Ten plants (one/pot) were used in each treatment. Bacterial suspension from 48-hr old cultures on NA were collected in SDW and adjusted to 1 × 10⁷ CFU/ml turbidimetrically. In the first experiment, two inoculation procedures were used: (i) spraying the bacterial suspension on the leaves of the *A. vera* plant to the point of run-off and (ii) injecting 2 ml of the bacterial suspension into collar region of the plants, using a 5 ml syringe. Control plants were either sprayed or injected with SDW. All pots were watered and covered separately with plastic bags for 48 hr. Plastic bags were removed and pots were randomly arranged on the green-house bench at 20 to 30°C and 60 to 90% relative humidity. All experiments were repeated three times.

RESULTS AND DISCUSSION

Disease symptoms: Infected *A. vera* suddenly show the symptoms of vigor loss. This is manifested in pale-green discoloration of inner leaves. The symptoms started as water soaked lesions at the base of the leaves. The rotting

¹ Director, ² Scientist, ³ P.G. Scholar

*Correspondance

Study on the Effective Supplementation of *Aloe vera* gel antacid to Peptic Ulcer Patients

Research Journal of Medicine and Medical Sciences, 3(2): 132-134, 2008

© 2008, INSInet Publication

Study on the Effective Supplementation of *Aloe vera* Gel Antacid to Peptic Ulcer Patients

¹Rajendran, A., ²G. Sobiya and ¹I. Gnanavel

¹Life Care Phyto Remedies, Chennai 600 056, Tamilnadu, India

²Department of Nutrition and Dietetics, Bharat College of Science and Management, Thanjavur.

Abstract: The experimental study was conducted at two different hospitals situated in Thanjavur District of Tamilnadu, India, during 2006 to study the effect of *Aloe vera* juice in supplementing the peptic ulcer in human beings. The sample comprised 37 males and 63 females whose age ranged from 18-83 years. Fifteen patients who were suffered by severe peptic ulcer were selected for the supplementation of aloe vera juice for period of 45 days. Male patients had 8.71 g/dl mean value compared to reference value 17 g/dl result in anemic prevalence among male population. Nearly about 8 g/dl were noticed among female population, which was very much low when compared to normal reference haemoglobin level. Initially the patients had the haemoglobin of 6.32 g/dl after supplementation it was increased to 8.25 g/dl. The mean weight of the male and female were 68.34 and 53.42 kg, respectively. The mean heights of the male and female were 174 and 159 cm, respectively. The waist hip ratio for both male and female was 0.79. Body mass index were calculated by using with the standard formula were found to be equal.

Keywords: Aloe juice, supplementation, peptic ulcer, haemoglobin and anthropometry

INTRODUCTION

Aloe vera L. (Syn: *A. barbadensis* Mill.) is an important medicinal plant belongs to the family Liliaceae and has long been employed in medicinal preparation and for flavouring liquors and a source of drug 'aloin'. It contains 4.5 to 25 per cent aloin. In present days, herbal remedies are gaining their prominence, because of the observation that the efficacy of allopathic medicines such as antibiotic, which once had near universal effectiveness against serious infectious is on the wane. Over the years, infectious agents have developed resistance to synthetic drugs and the herbs and their active constituents are now being increasingly used to treat various diseases. Aloe products have long been used in health foods and for medicinal and cosmetics purposes^[5]. The aloe substances are derived from thin-walled mucilaginous cells of the inner central zone of the leaf the inner fillet. It is the gel thought to have emollient and moisturizing effect and therapeutic properties^[5]. It acts an antihistamine and also act as a mild laxative and since most peptic ulcer patient in the journal showed that the chemical administration of aloe gel emulsion resulted in permanent relief for 94 per cent of ulcer patients who had the condition for an extended period of time. Keeping the above facts in view, the present study was undertaken to supplement the aloe vera gel to control peptic ulcer in human beings.

MATERIALS AND METHODS

The experimental study was conducted at two different hospitals situated in Thanjavur district of Tamilnadu, India. About 100 ulcer patients visiting Gastrology Department of the above said hospitals were identified by purposive sampling method as subjects for the study. The samples comprised 37 males and 63 females whose age ranged from 18-83 years. Based on the cooperation and willingness to participate on the supplementation programme, 15 patients who were suffered by severe peptic ulcer were selected for the supplementation of the aloe vera juice (*Aloe vera* antacid) for a period of 45 days. The juice was given to the patients @ 30 ml per day in three split doses. The haemoglobin test was used to evaluate the oxygen carrying capacity of the blood. This was done by cyanomethemoglobin method^[7]. Anthropometry measurements like height and weight were recorded with appropriate standard technique. Body mass index was also calculated from the value of height and weight to assess their malnutrition status. Waist and hip circumferences were also noted to check their waist hip ratio for obtaining specification. Students't' test analysis was done for the purpose of comparison^[6].

Preparation of *Aloe vera* Gel Antacid: Organically grown matured leaves of *Aloe vera* were cut from the plant and sap was removed carefully. The colorless

Corresponding Author: Rajendran, A., Life Care Phyto Remedies, 14-Kamatchi Nagar, 2nd Street, Ayyappabthangal, Chennai 600 056.

Effect of Organic Manures and Spacing on *Aloe vera* L.

Journal of Medicinal and Aromatic Plant Sciences 30 (2008) 40-42

Effect of organic manures and spacing on *Aloe vera* L.

A. RAJENDRAN AND I. GNANAVEL

Life Care Phyto Remedies, Herbal Research Foundation, Ayyappanthangal, Chennai, Tamil Nadu-600 056, India.

Received 27th July, 2007

ABSTRACT

An experiment was conducted during 2005-06 at a farmers' field in Salem district, Tamil Nadu, India, to study the effect of the different organic manures and spacing on the medicinal plant *Aloe vera*. The different organic manures as well as spacing significantly influenced the growth and yield of *A. vera*. Application of neem cake @ 1.50 t ha⁻¹ and spacing of 90 x 90 cm recorded the highest leaf yield of 56.24 t ha⁻¹.

Key words: *Aloe vera*, agronomic practices, organic manures, spacing.

INTRODUCTION

Aloe vera L. (Syn: *A. barbadensis* Miller) is an important medicinal plant belonging to the family Liliaceae. It is a perennial, drought resistant, succulent plant with a whorl of elongated pointed fleshy leaves. *A. vera* has a larger demand in medicinal drug market of the world. *Aloe vera* sap contains cathartic anthra-glycosides as its active principle ranging from 4.5 to 25 per cent of aloin. Recent studies indicate that herbal remedies are gaining their performance, because of the observation that the efficacy of allopathic medicines such as antibiotics, which once had near universal effectiveness against serious infectious in on the wane. Over the years, infectious agents have developed resistance to synthetic drugs and the herbs and their active constituents are now being increasingly used to treat various diseases like ulcers, healing of cancer sores, burns, itching, fever, tuberculosis and paralysis. Aloe products have long been used in health foods medicinal purposes and cosmetics [1]. These products range from aloe drinks to aloe gels, powders, capsules, creams etc. for both internal and external uses for a wide variety of indications. Several patents have been registered especially for cosmetic uses of aloe leaves. Hence the cultivation of *A. vera* has acquired great commercial importance for medicinal products and cosmetics processing but information are scarce about agronomic management of this crop. Further, the organic cultivation of the crop is also gaining importance, because the product used in food, medicinal and cosmetic industries and the organic *A. vera* is expected to be a better marketable product. Keeping this fact in view, the present investigation was undertaken to standardize the agro techniques for *A. vera*.

MATERIALS AND METHODS

Experiment was conducted at farmers' field in Salem district, Tamil Nadu during 2005-06, to standardize the spacing and organic manures for cultivating the medicinal plant *A. vera*. The soil of the experimental field was loamy sand with a pH of 8.2 and was low in available nitrogen (196 kg N ha⁻¹), medium in available phosphorus (17 kg P ha⁻¹) and high in available potassium (324 kg K ha⁻¹). The raised sand bed nursery was prepared to a height of 15 cm, width of 1 m and length of 10 m. The rhizome was used as a propagative material for cultivating *A. vera*. The underground root of the mother plant was dug out and made into 6-7 cm long pieces having 2-3 nodes on them. These were directly planted in the sand bed at spacing of 4 cm. Regular watering was done for establishment of cuttings. The cuttings were ready for transplanting after 60 days (Plate 1).

The experimental field was thoroughly prepared and it was laid out in a split plot design with three replications of plot size of 8 x 8 m. The main treatments comprised organic manures viz., neem cake @ 1.50 t ha⁻¹, farmyard manure (FYM) @ 12.50 t ha⁻¹, well decomposed pressmud @ 12.50 t ha⁻¹ and control. The sub treatments consisted three spacings viz., 60 x 60, 75 x 75 and 90 x 90 cm. The plot was individually supplied with the organic manure as per the treatment schedule. Full dose of all the organic manures were applied to the field as basal. Sixty days old established rhizome cuttings were planted at different spacing as per the treatment schedule. Irrigation was done immediately after planting. The subsequent irrigations were done by adopting the drip irrigation system, depending upon the moisture status of the soil. All the intercultural operations were done as and when required. The side shoots produced from the main plants were frequently removed for increasing the main plant weight. The plants were ready for harvest in nine months after planting. The leaves were cut transversally at the bottom, at the time of harvesting. The observations recorded were plant height, number of leaves plant⁻¹, leaf weight plant⁻¹, gel weight plant⁻¹, leaf yield hectare⁻¹, gel yield hectare⁻¹ and leaf: gel ratio. The leaf: gel ratio was calculated by dividing the values of the weight of gel with the corresponding values of the weight of whole leaf and expressed in number. The experimental data were

Email: gnanam76@rediffmail.com

A Study on different ALOE VERA Gel process technologies

STUDY ON DIFFERENT *Aloe vera* GEL PROCESS TECHNOLOGIES

Rajendran,A.

Life Care Phyto Remedies, Herbal Research Foundation,

Ayyappanthangal, Tamilnadu-600 056, India

Email: rajendran_dr@hotmail.com

ABSTRACT

The study was conducted at University of Madras, Chennai, during 2004; to compare the composition of cold processed *Aloe vera* gel with other process technologies. Among the different process technology, cold processed *Aloe vera* gel registered the highest glucose content of 102.8 mg/dl, protein content of 0.40 gm/dl, cholesterol content of 10.6 mg/dl, the purine of 5.4 mg/dl, creatinine of 1.42 mg/dl, albumin of 0.48 gm/dl, globulin of 2.0 gm/dl, amylase of 2.0 mg/dl, lipase of 1.5 units/dl, folic acid of 19.2 mg/dl and phosphatase of 48.6 mg/dl, Vitamin B12 of 398 pg/ml, Vitamin B1. of 3.19 mg/dl, Vitamin B2 of 3.26 mg/dl and Vitamin B6 of 5.09 mg/dl, muco polysaccharides of more than 25000 molecule in length and lowest aloin content 0.001 per cent. All other processing technologies recorded the lowest content of above composition compared to cold processed technology. The cold processed *Aloe vera* gel and *Aloe vera* gel freeze dried were observed to be odourless. The colour of gel varied from colorless to pale yellow.

Key words: aloe gel, cold process, composition and technologies

Corresponding author: Rajendran, A.Life Care Phyto Remedies, 14 Kamatchi Nagar,

2nd street, Ayyappanthangal, Tamilnadu-600 056, India, Email: rajendran_dr@hotmail.com

HerbalTech

Voice of herbal industry worldwide

Industry

Volume 4

Issue 09

July 2008

Price - Rs.50/-

Ayurvedic drug makers oppose Govt move to test products for exports

Concerned over adverse reports from global markets on traditional products exported from India, the Centre had recently proposed quality-linked tests and certification of ayurvedic, unani and siddha products before they left the country's shores.

But the proposal, from the Union Commerce Ministry, has not found favour with

domestic ayurvedic drug manufacturers, who say the tests are expensive, repetitive and could delay the actual export.

Exporters will have to spend about Rs 17,000 for testing and certification from the Export Inspection Agency (EIA) on every batch in the consignment and, sometimes, the entire consignment may be worth

that much, points out Mr Ranjit Puranik of the Ayurvedic Drug Manufacturers' Association (ADMA). Companies honour small overseas orders, as they could translate into larger transactions. But if the producer is required to spend on every batch of the consignment, the smaller exports could disappear, he said.

The Drugs and Cosmetics Act has norms on the presence of heavy metals like lead, arsenic, cadmium and mercury, as also aflatoxin, pesticides and so on. And large exporters test their products within these norms. Therefore, subjecting every batch to additional tests by the Commerce Ministry's EIA will be expensive and repetitive, he added.

Ayurvedic...2

Inside this Issue

Need for registering the crude herbal drugs sold by the crude drug dealers to26

Coleus forskohlii - A Plant with Natural Therapeutic Potential.....17



Commercial Production of Medicinal Plant *Aloe Vera L.* 15

Guggul the wonder herb 13

Erwinia chrysanthemi: A plant pathogenic bacteria in *Aloe vera* L

HerbalTech Industry

Voice of herbal industry worldwide

Volume 4

Issue 10

August 2008

Price - Rs.50/-

Ayush approves two Ayurveda clusters in Maharashtra and another one at Konkan is on cards

The Ayush Department gave approval for Ayurveda clusters in Nasik and Pune, to assist the Ayurveda drug manufactures to meet the quality standards. In Nasik and Pune, common manufacturing, testing and marketing facilities will be set up. There is also a plan in Konkan region under the active consideration of health ministry. Especially the small and medium scale unit manufacturers who cannot

afford to establish advanced facilities on their own; the clusters will prove very useful for those manufactures. The cluster in Nasik will be established at an estimated cost of Rs. 7.3 crore. Ayush department will provide Rs. 4.21 crore in this establishment.

The promoters, the manufacturers have to collect Rs 1.20 crore and rest will be taken as loan from the bank.

Common tablet coating machines, extraction machine and packaging machines like blister packing and strip packing are included in the establishment of cluster.

For analysing the products there will be advanced technological facilities like gas chromatographers, HPTLC and atomic absorption machine for heavy metal testing. Facilities for conducting stability testing,

shelf-life study and toxicological study will also provide in cluster.

There are near about 25 manufacturers who want to be a part of the cluster in Nasik and the requirement of manufacturers are minimum 15. According to the sources it will be established over an area of 24,000 sq. Feet.

Source: www.pharmabuzz.org

Inside this Issue

Lichens of Commercial Importance in India 26

Erwinia chrysanthemi: a plant pathogenic bacteria in *Aloe vera* 20

Neem- The Aristha 18



Commercial production of Medicinal Herb *Coleus Aromaticus* (Benth)

HerbalTech Industry

Voice of herbal industry worldwide

Volume 4

Issue 12

October 2008

Price - Rs.50/-

India working on herbal cure for AIDS: Kalam

New Delhi: Indian and Japanese scientists are working on developing herbal and Ayurvedic formulations to treat the dreaded HIV/AIDS, former Indian president A.P.J. Abdul Kalam said. "Indian and Japanese scientists are working together on nearly 60 plant species and have found 16 plant species which have properties to fight AIDS," said Kalam, an eminent scientist himself.

He was speaking at the Southeast Asian conference on Tuberculosis and Chest Diseases after inaugurating it. He, however, did not specify the plant species or the institutes where this research was on.

Kalam said the Army Medical Corps too were working on some formulations based on Ayurveda, ancient Indian system of medicine, to cure HIV/AIDS.

He said herbal medicines are part of "our age-old traditions and we should work on them to treat diseases".

About discrimination against people suffering from AIDS and TB, he said: "HIV-positive students were thrown out of a school in Kerala and many women are thrown out of in-laws' place due to TB infection. Discriminations must stop. Every one needs dignity."

India is home to 2.5 million HIV/AIDS patients including over 70,000 children below the age of 14. Similarly, every year at least 320,000 Indians die of TB.

Nearly 500 experts from Southeast Asian countries are in Delhi to participate in the three-day TB and Chest diseases conference.

Source: www.thaindian.com

Inside this Issue

Commercial Production of Medicinal Herb
Coleus aromaticus (Benth.) 12



An overview of Medicinal and pharmacological ... 16

Estrogen bearing plants or Phytoestrogens from India 27

Commercial production of Medicinal Herb *Coleus Aromaticus* (Benth)

Commercial uses of Natural color and Production of Annatto (*Bixa orellana* L.)

A. Rajendran and I. Gnanavel

General Description: *Bixa orellana* L. (Family: Bixaceae) is a shrub or bushy tree which ranges from 3 to 10 meters in height. Its glossy, ovate leaves are evergreen with reddish veins; they have a round, heart-shaped base and a pointed tip. With a thin, long stem, the leaves are between 8 and 20 cm long and 5 and 14 cm wide. The twigs are covered with rust colored scales when young and bare when older. *Bixa*'s flowers are pink, white, or some combination, and are 4 to 6 cm in diameter. From the flower protrudes a striking two-valved fruit, covered either with dense soft bristles or a smooth surface. These round fruits, approximately 4 cm wide, appear in a variety of colors: scarlet, yellow, brownish-green, maroon, and most commonly bright red. When ripe, they split open and reveal a numerous amount of small, fleshy seeds, about 5 mm in diameter and covered with red-orange pulp, the embryo of which is poisonous.

Chemical Constituents: *B. orellana* exhibited some level of antifungal activity when a group of Latin American plants were subjected to screening for antifungal activity (Freixa *et al.*, 1998). In another experiment, the lipid fraction of *B. orellana* seeds was extracted using n-hexane and isolated by thin-layer chromatography; it seems that *Bixa* seeds contain a higher concentration of delta-tocotrienol than any other vegetable species (Frega *et al.*, 1998). Recently, three apocarotenoids were isolated from annatto (*B. orellana*) and synthesized. They were: methyl (9Z)-8'-oxo-6, 8'diapocarten-6-oate (2), methyl Z)-10'-oxo-6, 10'diapocaroten-6-oate (4), and methyl (9Z)-14'-oxo-6, 14'diapocaroten-6-oate (5) (Haberli and Pfander, 1999). In another experiment, three minor carotenoids were isolated from the seed coat of *B. orellana* fruits by chromatographic methods and, for the first time, geranylgeraniol has been found esterified with a carotenoid carboxylic acid (Mercadante *et al.*, 1999).

Food and Other Uses: The dye obtained from the pulp of the *B. orellana* seed (called bixin) is used all over the world as a red-orange dye for coloring rice, cheeses, soft drinks, oil, butter, and soup. The dye is also used in some regions to dye. The red pulp from the seeds is used in the as polish for russet leather and the seeds are ground and used as a condiment (Magness *et al.*, 1971). Various indigenous groups paint their hair and bodies with the pulp to repel insects and protect from sunburn. The seeds are given to bulls to make them aggressive for bullfighters and are taken by Indians as an aphrodisiac (Morton, 1981).

Origin and Distribution: *B. orellana* can be found in regions spanning the globe. Native to the tropical American area, *B. orellana* is found in largest quantities from Mexico to Ecuador, Brazil, and Bolivia. This plant is cultivated in warm regions of the world, such as India, Sri Lanka, and Java (Wolf, 1997) mainly for the dye which the seeds yield. The plant

is also widely cultivated and naturalized in tropical and subtropical regions throughout the rest of the world.

Climate and Soil: *B. orellana* requires full sunlight and protection from the wind. The plant grows equally well in lowlands and mountainous regions or areas of higher elevation. Rainfall ranges from 1000 mm to 3000 mm per year in areas where the species grows naturally or under cultivation. Soils with textures from sands to clays are colonized. The species tolerates relatively low base saturation and moderate compaction. Annatto is vulnerable to overtopping and smothering by trees, shrubs, vines, and grass. Plants that have become overtopped and shaded cease to flower and bear fruit. The species is frost sensitive.

Propagation: The annatto can be propagated by cuttings of mature wood and by seeds. Cuttings taken from flowering plants produce flowers and fruits and a smaller shrub than plants of seed origin (Bailey, 1941). Annatto can be grafted by several techniques. The best method is budding. Stem cuttings rooted (up to 60 percent) when treated with IAA or IBA (Thirunavoukkarasu and Saxena, 1997). Belfort *et al.* (1992) reported that seeds dried to moisture contents of 10 to 15 percent germinated at from 8 to 58 percent compared to fresh seeds (65 percent moisture) that gave 96 percent germination. Scarification was reported to improve germination of fresh seeds. Mechanical scarification proved superior to acid or hot water treatments (Amaral *et al.*, 1995).



Figure : 1 - Bixa Nursery

Potential antidiabetic activity of Medicinal plants

The Journal of Phytopharmacology (Pharmacognosy and phytomedicine Research)

Review Article

ISSN 2320-480X
JPHYTO 2018; 7(5): 456-459
September- October
Received: 05-09-2018
Accepted: 10-10-2018
© 2018, All rights reserved

A. Rajendran
Lifecare Phytoremedies,
Ayyappanthangal- 600056, Chennai,
India

R. Sudeshraj
Life Care Phyto Labs, Perambalur-
621212, Tamil Nadu, India

S. Sureshkumar
Department of Chemistry, Rajalakshmi
Engineering College, Chennai- 602105,
Tamil Nadu, India

Correspondence:
Dr. A. Rajendran
Lifecare Phytoremedies,
Ayyappanthangal- 600056, Chennai,
India
Email: rajendran_dr[at]hotmail.com

Potential antidiabetic activity of medicinal plants – A short review

A. Rajendran, R. Sudeshraj, S. Sureshkumar

ABSTRACT

Diabetes mellitus is a dreadful disease caused by the increase in hepatic glucose production and impaired insulin action. The usage of herbal based medicine has been increasing tremendously in both developing and developed countries over the last three decades. The present study aims to provide a comprehensive review of antidiabetic activity of following medicinal plants like *Gymnema sylvestris*, *Rubia cardifolia*, Bilberry, Green Tea, *Salacia reticulata*, *Berberis aristata*, *Pterocarpus marsupium*, Fenugreek, Ashwagandha, Bitter melon. The efficiency of these medicinal plants may regulate the diabetic metabolic abnormalities. This work would help researchers to choose potential herbal for diabetic treatment.

Keywords: Medicinal plants, Anti-diabetic activity.

INTRODUCTION

Now a day's medicinal plants are considered as an important therapeutic aid for reducing ailments of human being. Strong medicinal systems like ayurveda, unani and chinese, are still promising and has been practised over 1500 years. The people (>60-80%) from developed as well as developing countries depend on these medicinal system for their health care requests [1]. Existing medicinal plants contain several active chemical constituents which responsible to treat various ailments [2]. Several research articles have been published upon n-number of traditional medicinal plants that these plants possess specific action on various ailments such digestive, respiratory, reproductive systems, diabetes, vision, and urinary systems [3].

Diabetes mellitus (DM) is a faction of metabolic disorder and commonly affects many people around the globe. Due to decrease in insulin, DM has been characterized by hyperglycemia, hyperlipidemia, hyperaminoacidemia, and hypoinsulinaemia. DM generally known to be two types based on insulin dependent (i.e., type I and type II diabetes). Type I diabetes is also known as immature diabetes which depend on insulin and affects 5% of diabetic population. The Type II diabetes known to be non-insulin dependent and generally affects people who are above 40 age groups. It is well established that the hyperglycemia of diabetes which damages organs in the body [4]. It has severe effects on lipid metabolism arises from chronic hyperglycemia and abnormality of lipid profile. These end up with lot more problems including retinopathy, cardiovascular disorder, polyurea and polyphasia [5]. Even though scientist from academics and pharmaceutical industries are inventing medicines for diabetic still the DM and related ailments are major health issues among people which is upsetting over 10% of people worldwide [6,7]. Conventional therapies are available for diabetes mellitus such as administering various oral antidiabetic and insulin. But in developing countries the anti-diabetic medicines are not affordable by many people as they are expensive. Alternatively, active molecules have been discovered from traditional medicinal plants by several research groups to overcome the diabetes and associated oxidative damage.

This review article provides a compiled report of most common medicinal plants which has hypoglycaemic activity available in various scientific journals. This review article may be useful for scholars who are doing research in phyto pharmacology and helping to build up their knowledge on developing alternative medicine for various kind of DM and associated ailments.

Moringa Oleifera leaf extracts as incredible health super food supplement

www.ThePharmaJournal.com

The Pharma Innovation



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2019; 8(2): 29-33

© 2019 TPI

www.thepharmajournal.com

Received: 14-12-2018

Accepted: 18-01-2019

A Rajendran

Life Care Phyto labs,
Perambalur, Tamil Nadu, India

R Sudeshraj

Life Care Phyto Remedies,
Ayyappanthangal, Chennai,
Tamil Nadu, India

S Sureshkumar

Department of Chemistry,
Rajalakshmi Engineering
College, Chennai, Tamil Nadu,
India

Phytonutrients: *Moringa oleifera* leaf extracts an incredible health super food supplement

A Rajendran, RSudeshraj and Sureshkumar

Abstract

Herbs have been used for centuries to treat various ailments without any side effects. *Moringa oleifera* Lam, (MO) is a good source of phytochemicals having a wide range of impending applications in medicine and dietary supplement preparations. MO has the following properties like antibacterial, antioxidant and protease inhibition properties. The MO plant parts (seeds, fruits pods, flowers) are said to hold several medicinal values through the leaves are thought to be major medicinal values. MO possesses antiinflammatory, hepatoprotective, antinociceptive, oxidative DNA damage protective, antiperoxidative, and cardio protective effects. These properties attributed due to the MO herb contain various functional bioactive components including, flavonoids, alkaloids, natural sugars. MO is rich in protein, vitamins, minerals, amino acids, phenolic acids and phytosterols. Thus MO has become a prominent herb with several therapeutic values. Hence, the present study provides a comprehensive report on MO and its therapeutic values. In addition, the scope for the future perspectives of MO is also discussed.

Keywords MO tree parts, bioactive phytoconstituents, therapeutic values

Introduction

Medicinal herb has been used for centuries to cure various ailments. Past few decades synthetic drugs have been modernised and used for various ailments in developed countries. However, in developing countries people are still rely on traditional medicine. MO contains polyphenols, antioxidants, phytonutrients (carotenoids, tocopherol, and ascorbic acids) minerals, vitamin C and vitamin E. MO possess the following broad range of biological functions like anti-cancer, hepato protective, anti-inflammatory, neuro protective function [1, 3, 4]. Several research articles revealed that MO have excellent therapeutic values including anti-rheumatoid arthritis, anti-infertility, anti- depression, anti-inflammation, thyroid regulation, anti-diabetics and diuretic effects [5, 6]. Developed countries are using this MO as an effective dietary supplement to combat malnutrition.

MO tree parts like leaves, flowers and seeds have been found to be valuable. Thus the valuable MO has gained remarkable understanding over the past few decades, thereby leading to invention of its pharmacological function and basic mechanism. The provided in this article would give an idea about pharmacological properties of MO and suggest that the MO leaves could serve as an effective dietary supplement to reduce problems associated with malnutrition.

Botanical description of MO

Common name- Drumstick tree, and Botanical name - *Moringa oleifera*. MO belong Moringaceae family of shrubs and trees which is a single genus family. The moringaceae family comprises of 13 species which is distributed in Indian subcontinent. Most commonly the MO tree height is around 10-15m and diameter is about 45cm. The bark has whitish grey and surrounded by thick cork with drooping branches (Pandey *et al* 2011). MO originated from Himalayan Mountain of northern India and now the plant has been cultivated in various regions for various purposes (Leone *et al* 2015). The plant grows in a place having warm, dry and moist. The temperature ranging from 25-35 °C and pH 5.0-9.0 required to grow MO tree, under sunlight, at an altitude of 550 meter. India is producing large amount (1.1–1.3 million tons/year in the area of 38000 ha) of MO pods. The following pie chart would give information of MO production approximately in the state of India Patel *et al* 2010.

Correspondence

A Rajendran

Life Care Phyto labs,
Perambalur, Tamil Nadu, India

Flax seeds a vegetarian source of nutraceutical supplement for complete health and wellness

IAJPS 2018, 05 (11), 11288-1291

A.Rajendran *et al*

ISSN 2349-7750



CODEN [USA]: IAJPBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.1476955>

Available online at: <http://www.iajps.com>

Research Article

PHYTONUTRITION . FLAXSEEDS A VEGETARIAN SOURCE NUTRACEUTICAL SUPPLEMENT FOR COMPLETE HEALTH AND WELLNESS

A.Rajendran^{1*}, R.Sudeshraj² and S.Sureshkumar³

¹Lifecare phytoremedies, Ayyappanthangal, Chennai, India . 600056

²Lifecarephytolabs, Perambalur, India - 621212

³Department of Chemistry, Rajalakshmi Engineering College, Chennai, India - 602105

Abstract:

Flaxseeds are cultivated worldwide for medicinal purpose, oil and nutritional purpose as it contains active phytochemicals which are considered as bioactive molecules for food supplements. The objective of this review article is to provide comprehensive details on flaxseeds for medicinal purposes and nutritional product. Recent literatures from various journals were collected using the following keywords: flaxseeds, functional properties, alphanolonic acid, lignans, and nutritional values. The research articles indicated that the flaxseeds have active biomolecules such as lignans, essential fatty acids, and dietary fibers which could reduce the risk of heart disease, lowering blood cholesterol, and improve digestion etc.

Keywords: *Flaxseed, lignans, Alpha-linolenic acid, micronutrients, functional properties*

Corresponding author:

A.Rajendran *

Lifecare phytoremedies,

Ayyappanthangal, Chennai,

India . 600056

rajendran_dr@hotmail.com,

sureshkumarbhc@gmail.com

QR code



Please cite this article in press A.Rajendran *et al.*, *Phytonutrition . Flaxseeds a Vegetarian Source Nutraceutical Supplement for Complete Health and Wellness.*, *Indo Am. J. P. Sci.*, 2018; 05(11).

Stress and Relaxation dietary health food supplements

The Pharma Innovation



ISSN (E): 2277- 7695

ISSN (P): 2349-3242

NAAS Rating: 5.03

TPI 2019; 8(5): 799-802

© 2019 TPI

www.thepharmajournal.com

Received: 24-03-2019

Accepted: 28-04-2019

A Rajendran

Lifecarephytolabs, Perambalur,
Tamil Nadu, India

R Sudeshraj

Lifecare Phytoremedies,
Ayyappanthangal, Chennai,
Tamil Nadu, India

S Sureshkumar

Lifecare Phytoremedies,
Ayyappanthangal, Chennai,
Tamil Nadu, India

Phytonutrients: Stress and relaxation dietary health food supplements

A Rajendran, R Sudeshraj and S Sureshkumar

Abstract

Stress is the psycho physiological sign which is really very complicate to describe. The following medicinal plants such as *Caryophyllus Aromaticus*, Valerian, *Camellia sinensis*, *Rauvolfia Serpentine*, *Cinnamomum verum* Brahmi, are claimed as anti-stress, anti-aging, disease prevention and life strengthening activities found in scientific research articles. Along with these herbs Gamma-Aminobutyric Acid also used in health supplement as neuro transmitter. The objective here is to provide a compiled report of these medicinal herbs on stress and relaxation effects and its ethnopharmacological considerations. In the present article, a detailed description of anti-stress and relaxation effects has been presented. All the findings were correlated with the pharmacokinetic activities to assess the above mentioned herbs.

Keywords medicinal plants, phytonutrients, pharmacological activities, stress and relaxation

Introduction

Since 3000 years from now, medicinal plants have been proven to treat various complicated ailments effectively without giving any side effects. Anxiety and depression are the two major mental illnesses. Worldwide more than 55 million people are suffering from mental disorders [1]. The complexities of the central nervous system make diagnoses, treatment, and amelioration of these debilitating illnesses exceptionally difficult. Advancement in these areas would be invaluable contributions in the effort to reduce the global impact of anxiety-based conditions. The universality of herbal remedies in many cultures makes them an appropriate treatment to explore.

A number of reviews of the clinical effectiveness of herbal and nutrient treatments for depression, anxiety disorders, and sleep disturbance have been published over the past decade. These have reviewed data associated with a number of treatments, including St. John's Wort, S-adenosyl-methionine (SAM-e), B vitamins, inositol, choline, kava, omega-3 fatty acids/fish extracts, valerian, lavender, melatonin, passionflower, skullcap, hops, lemon balm, black cohosh, ginkgo biloba, extracts of *Magnolia* and *Phellodendron* bark, gamma-aminobutyric acid (GABA), theanine, tryptophan and 5-hydroxytryptophan (5-HTP). However, none of these studies has been conducted in a systematic way.

Anxiety is serious psychological disorder that has to be cured using suitable medication without any side effects. Herbal based nutraceutical supplements have been used for centuries to alleviate anxiety and its associated symptoms without any side effects.

[The objective of this paper is to systematically review and summarize the available literature on herbal remedies and dietary supplements for treating anxiety and related symptoms in order to aid mental health practitioners in advising their patients and provide insight for future research in this field [2-8].

Medicinal herbs with anti stress effects

Caryophyllusaromaticus

[Studies suggest that methanolic extract of flower buds of *Syzygium aromaticum* could be used as stress related ailments and hyperglycemic condition.] It is further reported that the extracts showed antioxidant potential, total antioxidant, and total reducing power capacity attributed due to the presence of phenolic compounds in it. However, further extensive research should be conducted to substantiate *Caryophyllus Aromaticus* based supplement for stress relative ailments.

Correspondence

A Rajendran

Lifecarephytolabs, Perambalur,
Tamil Nadu, India

Seaweed nutraceutical as natural supplement for iodine and other mineral deficiency disorders

Seaweed nutraceutical as natural supplement for iodine and other mineral deficiency disorders

M. HELAN SOUNDARIA RANI¹, A. RAJENDRAN² AND A. MURUGAN^{3*}

¹Department of Biotechnology, Muthayammal College of Arts and Science, Kakkaveri-637 408, Namakkal District, Tamil Nadu.

²Life Care Phyto Remedies, No:14, Kamatchi Nagar, IInd street, Ayyappanthangal, Chennai-600 056, Tamil Nadu

³Marine Ecology & Conservation Lab, PG & Research Dept. of Zoology, V.O. Chidambaram College, Tuticorin-628 008, Tamil Nadu

* Corresponding Author: muruganrsa@gmail.com

ABSTRACT

For efficient thyroid function, iodine is essential and its deficiency has affected over 1 billion people in the world. Iodized salt was introduced to overcome this deficiency. As thyroid problems are often associated with heart or diabetics, the salt intake has its own restrictions. The natural iodine supply through food sources like vegetables depends on variable soil iodine content. Seaweeds, rich in iodine and other essential minerals, offer safe and natural source of iodine. Two nutraceuticals from the green seaweed *Ulva reticulata*, *Ulva* Tonic and *Ulva* Nutrispread, were formulated. The calcium, iron, potassium, zinc and magnesium, essential for normal body function, were in appreciable quantity in the nutraceuticals. Iodine composition was comparatively less when compared to other minerals. The organoleptic characteristics and acceptability evaluation revealed that the overall acceptability was good. Two volunteers, who were given the nutraceutical formulation for a week continuously, reported that the seaweed nutraceuticals helped in reduction of cold symptoms and gave considerable relief. These positive observations in volunteers denote that the nutraceuticals supply vital elements necessary for body function and provides resistance and immunity. This could also be linked with thyroid function rejuvenation. Monitoring of shelf life for one year revealed no change in odour, taste, color and appearance.

Keywords : Seaweed, *Ulva reticulata*, thyroid, minerals, iodine, nutraceutical, organoleptic characteristics.

Introduction

The thyroid gland is one of the important components of the endocrine system. The primary function of the thyroid gland is to produce thyroid hormones in order to regulate basic metabolic process. Hyperthyroidism and hypothyroidism are two main types of thyroid disease. In hyperthyroidism, the thyroid is overactive and so, the rate of metabolism speeds up. In hypothyroidism, the thyroid is under-active and so, the rate of metabolism slows down.

Iodine is an indispensable micronutrient that is required by human for the synthesis of thyroid hormones (triiodothyronine /T₃ and thyroxine /T₄). Chronic iodine deficiency can lead to numerous health problems in children and adults, including thyroid gland dysfunction (including goiter) and various neurologic, gastrointestinal and skin abnormalities (Mina et al., 2011). Iodine deficiency in pregnant or nursing mothers can lead to significant neurocognitive deficits in their infants (Nyaradi et al., 2013). Cretinism or severe mental retardation is a rare outcome of severe iodine deficiency during early development. Growth stunting, apathy, impaired movement or speech/hearing problems may occur (Zimmermann, 2009; Melse-Boonstra and Jaiswal, 2010).

Worldwide, iodine deficiency affects about two billion people and is the leading preventable cause of mental retardation (McNeil

et al., 2006). Though the iodine content in the body is minimal, it is an essential element for the maintenance of the life activities. And, the iodine content in the body should not be deficient or excessive (Xinju Song, 2009). The recommendations of iodine intake by the World Health Organization, United Nations Children's Fund and International Council for Control of Iodine Deficiency Disorders are shown in the Table 1.

Table-1. Iodine requirement

Group	Iodine intake (µg/day)
Infants and children, 0–59 months	90
Children, 6–12 years	120
Adolescents and adults, from 13 years of age through adulthood	150
Pregnant women	250
Lactating women	250

Source : WHO (2001, 2007)

Curcumin Loaded nanoparticles and its potent anti cancer activity: short review

Curcumin loaded nanoparticles and its potent anti cancer activity: short review

A Rajendran¹, R Sudeshraj² and S Sureshkumar¹

¹Lifecarephytolabs, Perambalur, Tamil Nadu, India

²Lifecare Phytoremedies, Ayyappanthangal, Chennai, Tamil Nadu, India.

Abstract

According to scientific literatures, cancers have been found to be the major causes of death among human. Lung cancer, prostate cancer, liver cancer, colorectal, stomach are the 5 most common sites of cancer found in men while breast cancer, colorectal, cervix, lung and stomach are the 5 most common sites of cancer found in women. Modern medicines are currently employed to treat cancer but often produce serious side effects which may not be able to cure later. Traditional medicines have potent action against different type cancers without or less side effects. Plant species like vinca rosea and zingiberaceous plants have been used since ancient times in traditional medicine to prevent and treat different types of cancer. Among them, Curcuma longa belongs to zingiberaceous family, has Curcuminoids a bioactive principle present in them which is responsible for anti cancer activity reported by several research articles. Further, curcumin has a range of therapeutic effects like chemopreventive, anti-inflammatory, anti-metastatic which helps to treat different types of cancers effectively. This review provides an overview of curcumins loaded nanoparticles and its potent anti cancer activity.

Keywords: Curcuminoids; nanoparticles; chemopreventive; anti cancer activity

Introduction:

Curcumin found in turmeric and has the characteristic of yellow in colour. Over the past decades, several research articles have been reported that curcumin has potent anti cancer activity in almost all type of cancers by suppressing cell proliferation and metastasis. Targets related to curcumin potent action are presented in figure 1.

Study on the Effective Supplementation of *Aloe vera* Gel Antacid to Peptic Ulcer Patients

Research Journal of Medicine and Medical Sciences, 3(2): 132-134, 2008

© 2008, INSInet Publication

Study on the Effective Supplementation of *Aloe vera* Gel Antacid to Peptic Ulcer Patients

¹Rajendran, A., ²G. Sobiya and ¹I. Gnanavel

¹Life Care Phyto Remedies, Chennai 600 056, Tamilnadu, India

²Department of Nutrition and Dietetics, Bharat College of Science and Management, Thanjavur.

Abstract: The experimental study was conducted at two different hospitals situated in Thanjavur District of Tamilnadu, India, during 2006 to study the effect of *Aloe vera* juice in supplementing the peptic ulcer in human beings. The sample comprised 37 males and 63 females whose age ranged from 18-83 years. Fifteen patients who were suffered by severe peptic ulcer were selected for the supplementation of aloe vera juice for period of 45 days. Male patients had 8.71 g/dl mean value compared to reference value 17 g/dl result in anemic prevalence among male population. Nearly about 8 g/dl were noticed among female population, which was very much low when compared to normal reference haemoglobin level. Initially the patients had the haemoglobin of 6.32 g/dl after supplementation it was increased to 8.25 g/dl. The mean weight of the male and female were 68.34 and 53.42 kg, respectively. The mean heights of the male and female were 174 and 159 cm, respectively. The waist hip ratio for both male and female was 0.79. Body mass index were calculated by using with the standard formula were found to be equal.

Keywords: Aloe juice, supplementation, peptic ulcer, haemoglobin and anthropometry

INTRODUCTION

Aloe vera L. (Syn: *A. barbadensis* Mill.) is an important medicinal plant belongs to the family Liliaceae and has long been employed in medicinal preparation and for flavouring liquors and a source of drug 'aloin'. It contains 4.5 to 25 per cent aloin. In present days, herbal remedies are gaining their prominence, because of the observation that the efficacy of allopathic medicines such as antibiotic, which once had near universal effectiveness against serious infectious is on the wane. Over the years, infectious agents have developed resistance to synthetic drugs and the herbs and their active constituents are now being increasingly used to treat various diseases. Aloe products have long been used in health foods and for medicinal and cosmetics purposes^[3]. The aloe substances are derived from thin-walled mucilaginous cells of the inner central zone of the leaf the inner fillet. It is the gel thought to have emollient and moisturizing effect and therapeutic properties^[5]. It acts an antihistamine and also act as a mild laxative and since most peptic ulcer patient in the journal showed that the chemical administration of aloe gel emulsion resulted in permanent relief for 94 per cent of ulcer patients who had the condition for an extended period of time. Keeping the above facts in view, the present study was undertaken to supplement the aloe vera gel to control peptic ulcer in human beings.

MATERIALS AND METHODS

The experimental study was conducted at two different hospitals situated in Thanjavur district of Tamilnadu, India. About 100 ulcer patients visiting Gastrology Department of the above said hospitals were identified by purposive sampling method as subjects for the study. The samples comprised 37 males and 63 females whose age ranged from 18-83 years. Based on the cooperation and willingness to participate on the supplementation programme, 15 patients who were suffered by severe peptic ulcer were selected for the supplementation of the aloe vera juice (*Aloe vera* antacid) for a period of 45 days. The juice was given to the patients @ 30 ml per day in three split doses. The haemoglobin test was used to evaluate the oxygen carrying capacity of the blood. This was done by cyanomethemoglobin method^[7]. Anthropometry measurements like height and weight were recorded with appropriate standard technique. Body mass index was also calculated from the value of height and weight to assess their malnutrition status. Waist and hip circumferences were also noted to check their waist hip ratio for obtaining specification. Students 't' test analysis was done for the purpose of comparison^[6].

Preparation of *Aloe vera* Gel Antacid: Organically grown matured leaves of *Aloe vera* were cut from the plant and sap was removed carefully. The colorless

Corresponding Author: Rajendran A., Life Care Phyto Remedies, 14-Kamatchi Nagar, 2nd Street, Ayyappalthangal, Chennai 600 056.

Study on the Analysis of Trace Element in Aloe vera and Its Biological Importance

Journal of Applied Sciences Research, 3(11): 1476-1478, 2007

© 2007, INSInet Publication

Study on the Analysis of Trace Elements in Aloe vera and Its Biological Importance

²Rajendran, A, ¹V. Narayanan and ²I. Gnanavel

¹Department of Inorganic Chemistry, University of Madras, Guindy Campus, Chennai-600 025, India.

²Life Care Phyto Remedies, Chennai 600 056, Tamilnadu, India.

Abstract: The role of some inorganic elements like vanadium, zinc, sodium, potassium, magnesium, aluminium, iron, nickel, cadmium, copper, cobalt and manganese in the improvement of impaired glucose tolerance and their indirect role in the management of diabetes mellitus, hypoglycemic, wound healing and anti-inflammatory effects are being used, which contain both organic and inorganic constituents. In the present study, an attempt has been made to analyze the inorganic elements present in the *Aloe vera* leaf gel. The concentration of various elements K, Mg, Na and Zn in the sample was more than 200 µg. The concentration of other elements analyzed in the sample decrease in the order Fe > Al > V > Cu > Mn > Pb > Ni > Co > Cd.

Key words: *Aloe vera* leaf gel, Trace elements

INTRODUCTION

Mineral elements serve as structural components of tissues and as constituents of the body fluids and vital enzymes in major metabolic pathways and are essential for the function of all cells^[3]. Their concentration in living tissues and the adult human requirement are somewhat lower than those of the bulk elements and they were not easily quantified by early analytical methods, hence the name trace elements^[6]. Growing concern with environmental factors in human health over the last few years has aroused renewed interest in the trace elements^[1]. Many herbs have been shown to have hypoglycemic action in animals and humans. However, the ultimate objective of their use is that they should interact directly with our body chemistry. They might be used in various forms like food and medicines, which contains both organic and inorganic constituents. Even trace elements play an important role in the formation of active constituents in medicinal plants. *Aloe vera* L. (*Aloe barbadensis* Miller) is an important medicinal plant belongs to the family Liliaceae. Aloe products have long been used in health foods and for medical and cosmetic purposes. These products range from aloe drinks to aloe gels, powders, capsules, creams, etc., for both internal and external uses for a wide variety of indications. Aloe gel contains phenolic anthraquinones, carbohydrate polymers and various other inorganic and organic compounds. Aloe has a wide range of medicinal applications such as wound healing effect, reduces blood sugar in diabetes, soothes burns, eases intestinal problems, reduces arthritic swelling, ulcer curative

effect, stimulates immune response against cancer, etc. Keeping the above facts in view, the present study was carried out to analyze the trace metal ion content of *Aloe vera* gel.

MATERIAL AND METHODS

The study was carried out at Department of Inorganic Chemistry, University of Madras, Guindy campus, Tamilnadu to analyze the trace metals in the *Aloe vera* sap. The matured *Aloe vera* leaves were collected from three different locations of Tamilnadu.

Preparation of Ash: Mature, healthy and fresh leaves of *Aloe vera* having a length of approx 1.5 – 2 ft were washed with fresh water. The leaves were cut transversely into pieces. The thick epidermis was selectively removed. The solid gel in the center of the leaf was homogenized. The dry-ashing method was adopted by placing the properly dried and ground plant sample (100 g) into a vitresil crucible overnight in an electric muffle furnace, maintaining the temperature between 410 °C and 440 °C, because loss of zinc might occur at >450 °C and loss of potassium occur at >480°C. Also, ashing will destroy all of the organic materials present in the sample. The ash was removed from the crucible and allowed to dry in a desiccator. The yield of ash in gel powder was approx 3.25 g/100g.

Analysis of inorganic elements in Aloe vera leaf gel ash: Two grams of ash were digested with mixture of nitric acid, sulphuric and perchloric acid in the ratio of

Corresponding Author: A. Rajendran, Life Care Phyto Remedies, No.14, Kamatchinagar, Second street, Ayyappanthangal, Chennai-56, Tamilnadu, India
Email: rajendran_dr@hotmail.com

Cultivation Technologies for Aloe Vera L.

HerbalTech

Journal of Herbal Science and Technology *Industry*

ISSN: 0974 6153

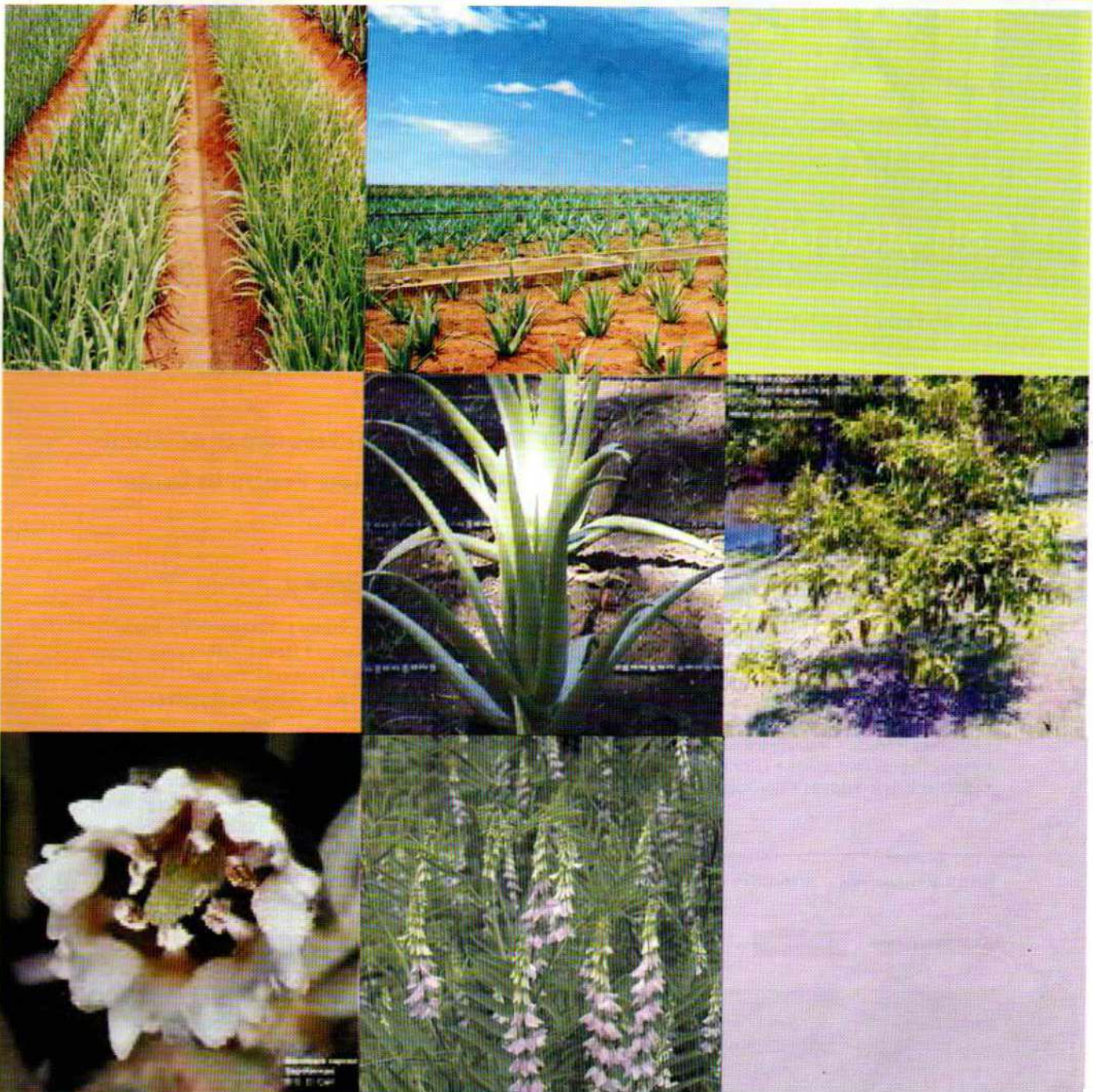
- Volume 8
- Issue 06
- June 2011
- Price - Rs.50/-

Cultivation Technologies for
Aloe vera L

Screening of phytochemical and *in vitro* activity of *Euphorbia hirta* linn.

Manilkara Zapota:
An Overview

Studies on Antibacterial Activity and Biochemical
Analysis of Aloe Vera and *Moringa Oleifera*



SAMANTHI
PUBLICATIONS
www.samanthi.in
www.herbaltechindustry.com



My experiences with herbal plants & drugs as I knew XXVIII :
Supply of material & Information on *Glycyrrhiza glabra* (Licorice)

HerbalTech *Industry*

Voice of herbal industry worldwide

Volume 5

Issue 01

November 2008

Price - Rs.50/-

Ayurgenomics: CSIR study establishes links between Ayurveda & Modern Science for Predictive & Personalized Medicine

A landmark study, the first of its kind in the world, finds links between Prakriti, a fundamental principle of Ayurveda, and modern genomics for development of predictive and personalized medicine. The study reveals that it is possible to identify groups within normal individuals of the populations, which could be predisposed to certain kind of

diseases, and also might respond differently to drugs. Such integration of the principles of Ayurveda with genomics, appropriately termed as Ayurgenomics by the authors, holds great potential and promise for future predictive and personalized medicine at an affordable cost.

For the first time it has been demonstrated that normal

individuals within the same ethnic population, clustered on the basis of clinical criteria described in Ayurveda, show variations in the basal levels of blood parameters used in routine for diagnostic purposes, as well as in basal levels of expression of genes.

Human genome sequencing and subsequent mapping of genetic variability has allowed us to identify genetic

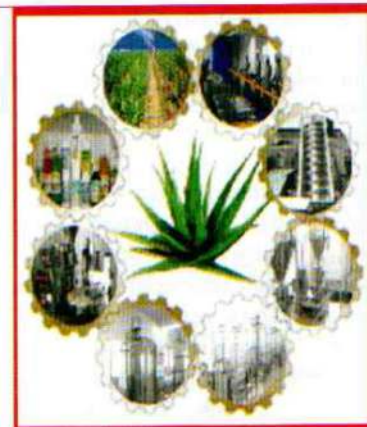


variations and patterns of variability across diverse global populations. India has also put systematic and

Ayurgenomics...2

Inside this Issue

Study on different Aloe vera gel process technologies in Phyto Pharma Industries 11



NEEM - The Aristha-2 16

Pyrethrum Industry in India 25