IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Human Journals
Research Article
April 2020 Vol.:18, Issue:1

Herbal Gel: Aloe Vera A Wonder Plant

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Shukla Shivakant*, Mishra Kaushelendra, Singhai A.K, Shukla Purnima, Nayak S.

Lakshmi Narain College of Pharmacy, Bhopal-462021

Submission: 20 March 2020
Accepted: 28 March 2020
Published: 30 April 2020

Keywords: Aloe vera, ornamental, skin problem, gel formulation, polymer, medicinal property

ABSTRACT

Medicinal herbs are moving from fringe to mainstream use with a greater number of people seeking remedies and health approaches free from side effects caused by synthetic chemicals: Aloe vera is well known for its marvelous medicinal properties. These plants are one of the richest sources of health for human beings coming from nature. It has been grown as an ornamental plant widely. Products of the plant are used in the treatment of various ailments. Various parts of the plant have different effects on the body. The Aloe vera extract is used for many years as a natural herbal and safe remedy in various skin problems. Several marketed preparations in the form of gels and lotions containing Aloe vera are available. These formulations were prepared in concentrations of 1, 2 and 3% of respective polymers. These gels were further subjected to evaluation of properties like colour, clarity, pH, consistency, and viscosity measurements. Comparison of the results was done in an attempt to find an optimized Aloe vera gel formulation.

INTRODUCTION

The Aloe vera plant has been known and used for centuries for its health, beauty, medicinal and skincare properties. In more traditional uses, physicians use aloe vera-based creams to heal serious thermal injuries, such as burns and frostbite. Dentists employ aloe vera gels to reduce swelling and inflammation of the gums. Dermatologists rely on aloe vera products to help clear acne, and optometrists find the products helpful in soothing eye inflammations. The wide range of applications, and the beneficial effects of its use, continues to increase the popularity of this ancient plant [1].

Aloe vera is a perennial, drought-resisting, succulent plant belonging to the Lily (Liliaceae) family which, historically, has been used for a variety of medicinal purposes. The plant has stiff grey-green lance-shaped leaves containing clear gel in a central mucilaginous pulp.

Number of aloe vera herbal formulations available in the form of cream, gel, facial solution, moisturizer etc, while these formulations contain very less quantity of aloe vera extract and herbal component. These formulations may also contain toxic ingredients such as surfactant. Present investigation deals with the development of aloe vera cosmetic herbal hydrogel formulation i.e. cosmetic facial containing higher quantity of aloe vera leaf extract and herbal components[2].

The Egyptians called Aloe ―the plant of immortality. *Aloe barbadensis* Miller (Aloe Vera) belong to the Liliaceae family, of which there are about 360 species. The use of natural products in the prevention and treatment of oral conditions has increased recently and could be of benefit to low socioeconomic level in urban and rural communities. Among the various currently available herbal agents the most popular and currently receiving a lot of scientific attention is Aloe Vera. It is a perennial succulent xerophyte, which develops water-storage tissue in the leaves to survive in dry areas of low or erratic rainfall. The plant has stiff grey-green lance-shaped leaves containing clear gel in a central mucilaginous pulp [2].

Benefits associated with Aloe Vera have been attributed to the polysaccharides contained in the gel of the leaves. It is a cactus like plant that grows in hot and dry climates. The *Aloe barbadensis* plant consists of two different parts, each of which produces substances with completely different compositions and therapeutic properties. Numerous studies on Aloe Vera are being done to demonstrate the antiviral, antibacterial, analgesic, anti-inflammatory & wound healing properties [1,2].

The *Aloe barbadensis* plant consists of two different parts, each of which produces substances with completely different compositions and therapeutic properties. The parenchyma tissue makes up the inner portion of the aloe leaves and produces the Aloe Vera gel (or mucilage), a clear, thin, tasteless, jelly-like material [3].

Anatomy and Physiology of skin

The skin is the largest organ of the body, with a total area of about 20 square feet. The skin protects us from microbes and the elements helps regulate body temperature and permits the sensations of touch, heat, and cold.

Skin has three layers:

1. The epidermis, the outermost layer of skin, provides a waterproof barrier and creates our skin tone.

2. The dermis, beneath the epidermis, contains tough connective tissue, hair follicles, and sweat glands.

3. The deeper subcutaneous tissue (hypodermis) is made of fat and connective tissue.

The skin's color is created by special cells called melanocytes, which produce the pigment melanin. Melanocytes are located in the epidermis [4].

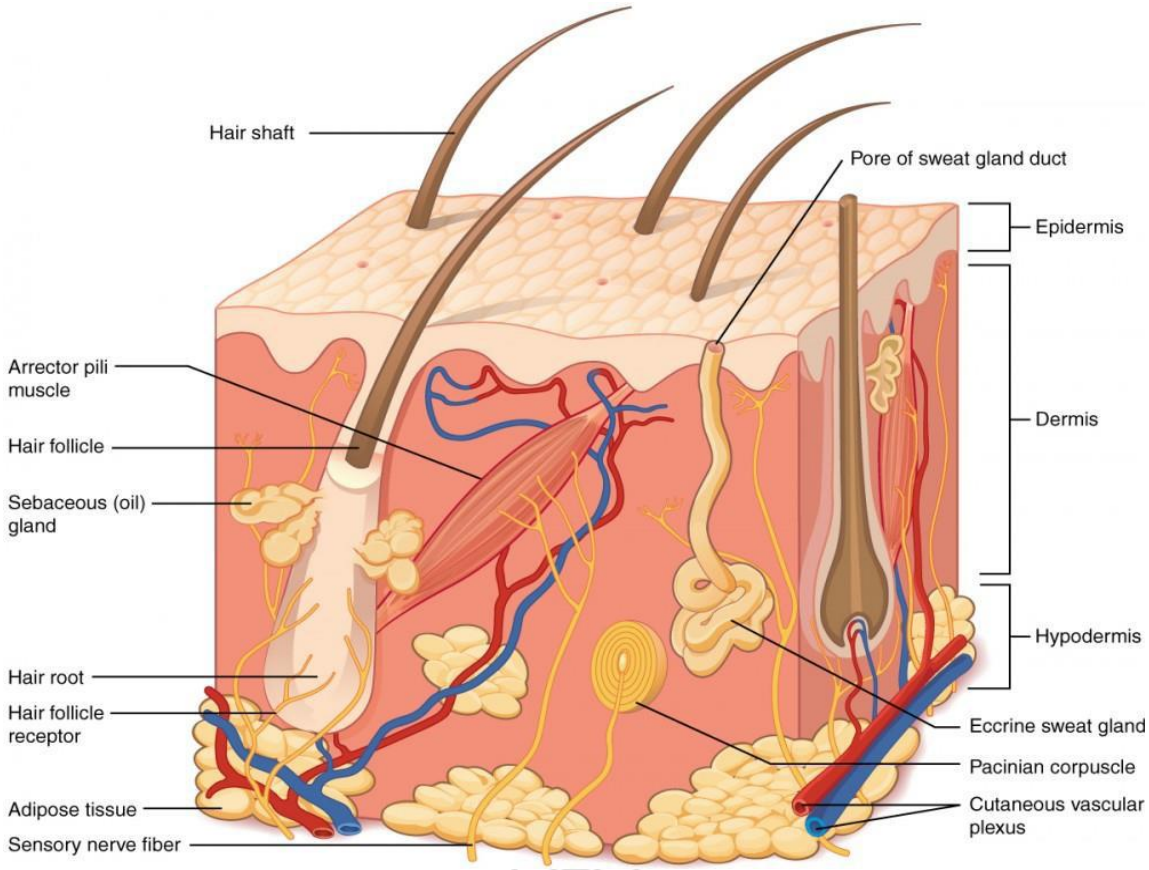

Figure No. 1: Structure of skin

Skin Conditions

1. **Rash** nearly any change in the skin's appearance can be called a rash. Most rashes are from simple skin irritation; others result from medical conditions.

2. **Dermatitis** A general term for inflammation of the skin. Atopic dermatitis (a type of eczema) is the most common form.

3. **Eczema** Skin inflammation (dermatitis) causing an itchy rash. Most often, it's due to an overactive immune system.

4. **Psoriasis** An autoimmune condition that can cause a variety of skin rashes. Silver, scaly plaques on the skin are the most common form.

5. **Acne** The most common skin condition, acne affects over 85% of people at some time in life.

6. **Cellulitis** Inflammation of the dermis and subcutaneous tissues, usually due to an infection. A red, warm, often painful skin rash generally results.

7. **Ringworm** A fungal skin infection (also called tinea). The characteristic rings it creates are not due to worms [4,5].

Topical drug delivery system

Topical drug delivery systems skin serves as one of the most easily accessible routes for drug administration. Topical delivery is defined as the application of pharmaceutical dosage form to the skin for direct treatment of cutaneous disorder or the cutaneous manifestation of the general disease, with the intent of confining the pharmacological or other effect of the drug to the surface of the skin. Topical drug delivery systems include a large variety of pharmaceutical dosage form like semisolids, liquid preparation, sprays and solid powders. Most widely used semisolid preparation for topical drug delivery includes gels, creams and ointments [6].

Desirable characteristics of topical drug delivery systems

• Topical formulations have three main functions:

• To help hydrate skin because of their emollient properties.

• To protect from external environment or heal an intact or injured area of the skin.

• To deliver medication to the skin [6].

Gels as pharmaceutical dosage forms

The term '**Gel**' was introduced in late 1800 to name some semisolid material according to their physiological characteristics rather than molecular composition. The U.S.P. defines gels as a semisolid system consisting of dispersion made up of either small inorganic particle or large organic molecule enclosing and interpenetrated by liquid [8].

Structure of gels

A gel consists of a natural or synthetic polymer forming a three dimensional matrix throughout a dispersion medium or hydrophilic liquid. After application, the liquid

evaporates leaving the drug entrapped in a thin film of the gel-forming matrix physically covering the skin.

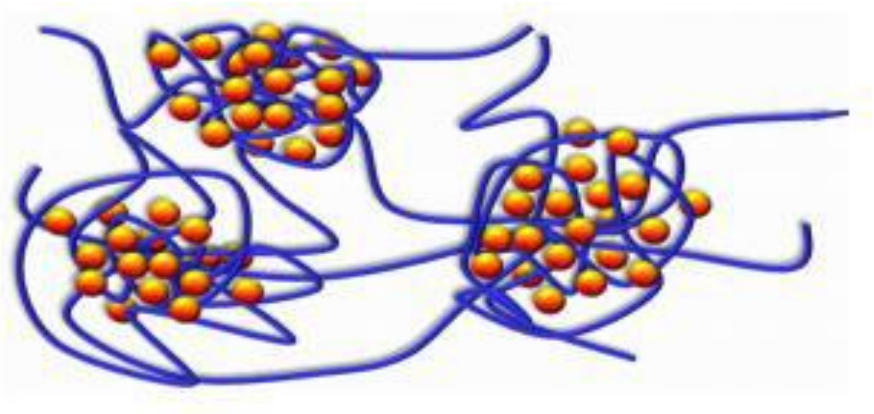

Figure No. 2: Structure of gels

Drug Profile

Aloe Vera

Synonyms: *Aloe barbadensis* Miller. *Aloe indica* Royle.

Common Name: GhritKumari.

Biological Source: Dried juice collected by incision from the bases of the leaves of various species of Aloe.

Aloe bardadensis (Curacao aloes)

Aloe spicata (Cape aloes)

Aloe perryi (Socotrine aloes)

Family: *Liliaceae*

Table No. 1: Taxonomical Classification

Kingdom	**Plantae**
Class	Liliopsida – Monocotyledons
Subclass	Liliidae
Order	Liliales
Family	Aloaceae – Aloe family
Genus	Aloe L.
Species	*Aloe barbadensis* miller

Various studies have been conducted to examine the benefits of the aloe vera gel and it was found out that aloe vera does in fact have several properties that are effective in treating a variety of skin conditions, from flaky or dry skin, cosmetic ailments, hair and scalp problems to many more[1,10].

Aloe Vera Gel

Aloe vera is known all over the world as the "wonder plant" – and for good reason! Aloe vera juice is an excellent health tonic that you can include in your healthy lifestyle.

Aloe leaves secrete a clear gel that when broken off from the rest of the plant that can be applied topically to heal wounds and soothe skin.

Aloe gel is reported to contain glycoprotein, polysaccharides and other constituents (enzymes, etc) and are essentially used for the treatment of various skin conditions (burns, abrasions, bruises, cuts, psoriasis, and herpes simplex). The gel of Aloe Vera contains about 75 nutrients and to be proved good remedy [11].

Benefits of Aloe Vera Gel

1. It treats sunburn. Aloe Vera helps with sunburn through its powerful healing activity at the epithelial level of the skin, a layer of cells that cover the body. It acts as a protective layer on the skin and helps replenish its moisture.

2. It acts as a moisturizer Aloe moisturizes the skin without giving it a greasy feel, so it`s perfect for anyone with an oily skin complexion.

3. It treats acne Aloe vera gel contains two hormones: Auxin and Gibberellins. These two hormones provide wound healing and anti-inflammatory properties that reduce skin inflammation.

4. It fights aging As we age, everyone begins to worry about the appearance of fine lines and the loss of elasticity in their skin. Aloe leaves contain a plethora of antioxidants including, beta carotene, vitamin C and E that can help improve the skin's natural firmness and keep the skin hydrated.

5. It's nutrient rich for good health This solid material contains over 75 different nutrients including vitamins, minerals, enzymes, sugars, anthraquinones or phenolic compounds, lignin, saponins, sterols, amino acids and salicylic acid[12].

PLAN OF WORK:-

The following plan of work for proposed project work:-

1. Collection of Aloe Vera Leaves

2. Authentication aloe Vera leaves

3. Extraction of aloe Vera leaves

4. Purification of Aloe vera extract

5. Formulation of aloe Vera herbal gel

6. Evaluation of herbal gel

7. Characterization and Optimization of Aloe Vera gel

• Appearance

•pH

• Percentage Moisture Content

• Transparency, smoothness and weight on drying

• Viscosity

•Microbial growth

• Gel Stabilization Technique

• Heat Treatment of gel.

Beaker-A

• In the beaker A, taken some slices of Aloe Vera leaves remove the spin of it. Then spooned of it the Aloe Vera gel in leaves into a gel form and collected in the beaker then weight up to 75gm.

• Then mixed with 100ml of ethanol for the extraction of aloe Vera gel. Heated for few minute to evaporate access of ethanol and then cooled in the beaker at room temperature and kept.

Beaker-B

• In this Beaker B, taken Glycerine 5ml, Sodium Benzoate (preservative) 0.5gm, Acacia 0.5gm, HPMC 0.5gm (As suspending agent) taken in another beaker. And now another mixture.

• Then take beaker and smoothly added with continuous starring to the beaker-1 and mixed well.

• After mixing Then it is makeup to 100ml with distilled water.

Figure No. 3: Aloe Vera Gel

MATERIALS AND METHODS

Aloe Vera pulp was obtained from cultivated aloe vera. All other ingredients like acacia, HPMC, Carbopol 934, glycerine, albumin, ascorbic acid, potassium sorbate, sodium benzoate, etc were purchased from local market of Bhopal, India. Double distilled water was used throughout the study. Aloe Vera leaves were collected from Medicinal garden of Lakshmi Narain College of Pharmacy, campus, Bhopal. The gel is prepared by peeling the outer portion of skin and pericarp. Carbopol 934NF, HPMC k15, PVP36000 are taken from the lab.

Preparation of aloe vera herbal gel

An aloe vera gel is converted into liquid form by heating at a low temperature for two hours. It is necessary that it should be heated at a low temperature in order to retain thermosensitive ingredients present in it. Tartaric acid is added to the aloe vera concentrate to adjust the pH within the range from 5.5 to 6.0. In separate container, the hydrogel forming polymers were dissolved in small amount of double distilled water in various proportions as shown in Table no.1, and then remaining ingredients i.e. glycerin, potassium sorbate and sodium benzoate were added. Now, aloe vera liquid extract was added to it and make up the volume up to 100 ml. The pH of this gel preparation was maintained 6±0.4 and stored in a well closed container.

Table No. 2: Formulation

Ingredients	Quantity
Aloe vera	75 ml
Ethanol	100 ml
Acacia	0.5 gm
HPMC	0.5 gm
Carbapol 934	0.5 gm
Glycerine	5 ml
Tartaric Acid	1.5 gm
Potassium sorbate	0.5 gm
Sodium Benzoate	0.5 gm
Double Distilled Water	q.s. up to 100 ml

Physico-chemical properties of Aloe Vera gel

Various companies had reported the physicochemical properties of Aloe Vera gel. This meets or exceeds the standards established by the International Aloe Science Council's (IASC) certification program for the determination of purity. Aloe Vera gel has a biologically active polysaccharide known as acetylated mannose or acemannan. Acemannan is one of many saccharides contained in Aloe Vera. Some of the others are arabinose, cellulose, galactose, mannose, and xylose. Prostaglandins are a third important set of compounds and are thought to play a major role in wound healing. Aloe Vera also contains fatty acids, enzymes, amino acids, vitamins, minerals, and other substances.

Quality parameters of Aloe Vera gel

The quality parameters such as fibre content, viscosity, refractive index, optical density and total soluble solid plays an important role in judging the quality and purity of extracted gel from Aloe Vera leaf. [13]

A. Fiber content

The fiber content is directly related to the purity of gel and become the criteria of efficiency of gel filtration unit. More fiber content, suggests poor filtration operation. The difference between crude gel recovery and pure gel recovery gives the amount of fiber in crude gel. It had been found that the fibre content 0.074 to 0.088 % of fresh weight of pulp.

B. Viscosity

Viscosity of gel is very important factor for deciding quality in terms of activities of biological compounds. The viscosity decreases as time passes. After harvest of Aloe vera leaf, the viscous pseudoplastic nature of Aloe Vera gel, mainly due to the presence of polysaccharides composed of a mixture of acetylated glucomannans is lost shortly after extraction, apparently due to enzymatic degradation. These shows there are some biological activities, which related to the viscoelastic behavior of gel.

C. Refractive index

Refractive index is the physical property of gel determines the purity of gel as compared to double distilled water. Gel with lowest refractive index is the best treatment for extraction process [14].

Collection of aloe vera leaves

The leaves of Aloe vera was collected from medicinal garden of Lakshmi Narayan College Of Pharmacy, Bhopal With the help of blunt knife. The leaves are safely cut at the base so that maximum amount of aloe vera pulp can be extracted.

Authentication of aloe vera leaves

The Leaves of Aloe vera was analysed under light microscope for presence of typical identifying characters.

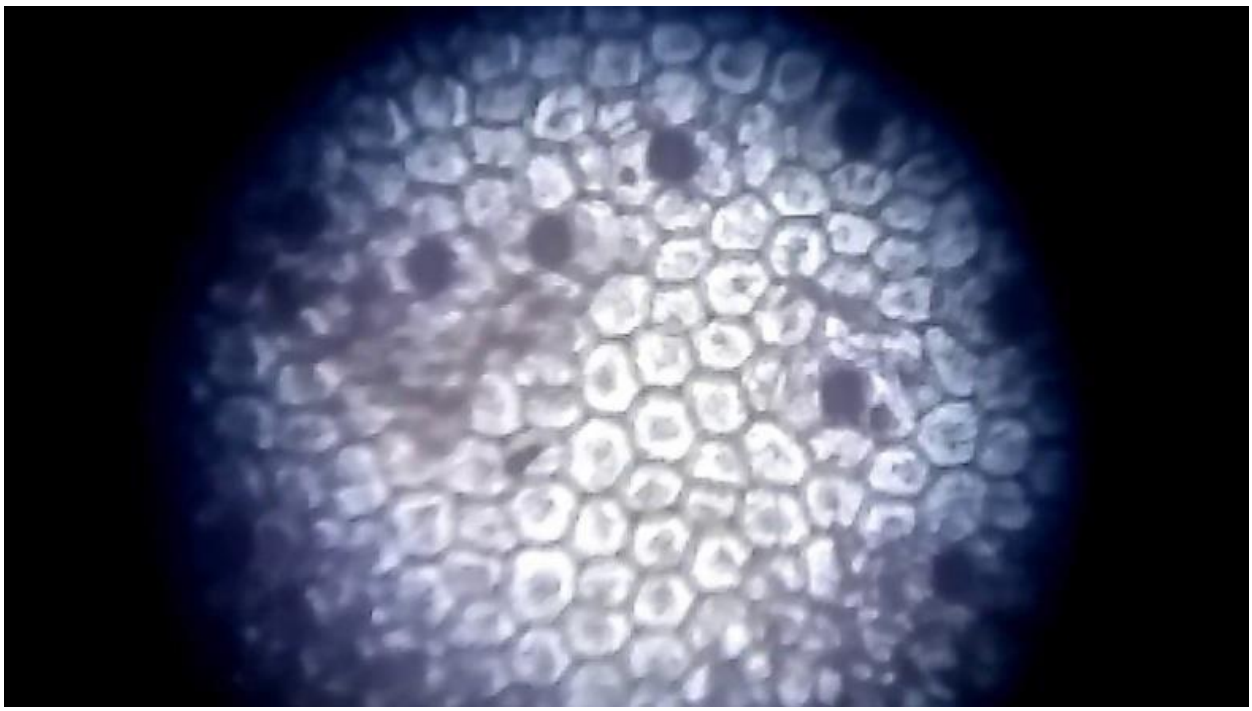

Figure No. 4: Microscopical Slide of Aloe Vera leaf

Extraction of gel from Aloe Vera pulp

The gel extraction from Aloe Vera leaves had been carried out by removing its exudates and its mucilage was scraped out with blunt edged knife. This mucilage was stirred vigorously in a blender to make it uniform. This solution was strained through a muslin cloth and filtered. This uniform solution was extracted for cold- extracted gel (CEG) and hot extracted gel (HEG) & Cold extracted gel (CEG). This solution was acidified with Hydrochloric acid (HCL) having pH 3.50 and the crude gel were precipitated out from the extract by adding slowly 95 % alcohol while stirring. The gel was obtained by centrifugation. Hot extracted gel (HEG) Material left after passing the blended solution through muslin cloth, was repeatedly treated with hot water until the complete extractions of gel was affected. The crude gel (HEG) was prepared as described above.

Extraction of Aloe Vera Gel by Centrifugation Method

In this method, the whole leaf after removal of the 'peel' the colourless hydro parenchyma was ground in a blender and centrifuged at10, 000rpm for 30 min at 40°C to remove the fibres. Two other patented processes to obtain gel are commonly used in the aloe industry. First method was to extract gel polysaccharides by alcohol precipitation. As described in the procedure, 20 ml of aloe gel was pumped into 100ml beaker. Ethanol (80 ml) was then added to the aloe gel and stirred for 20-30 minutes. The alcohol-aloe gel mixture then left to stand for 4 hours. The clear supernatant that formed was decanted or siphoned off, without disturbing the precipitate on the bottom of the tank. The solution was then placed into centrifuging buckets and centrifuged. The precipitate formed was collected and washed with fresh ethanol. This fraction was then freeze-dried. The pulp remaining after liquidised aloe gel filtered & used for this process. This pulp was then treated with sodium citrate that results in the freeing of polysaccharides from calcium. To the mixture, water was added & heated. This mixture was then filtered, and the liquid fraction, which contains the calcium free polysaccharides, known as aloe 'jelly'. Careful storage of gel (liquid or powder) is important to prevent loss of quality. Relative humidity 16 and temperature may affect product quality and shelf life. Freeze-dried gel has to be packaged in airtight containers or kept under dry conditions as it rehydrates rapidly [16].

Purification of Aloe Vera Gel

The next step in gel processing was to remove cellular material from the gel. Gel fillets are chopped into small chips and de-pulped using sieves. Gel fillets can also be liquidized as in the fruit juice industry and filtered to remove cellular material. After removal of the fibre, only the liquid gel remains. The gel in this crude form is sold as a commercial product, but may also be mixed with activated charcoal, filter pressed, stabilized (preserved) and dried. Treatment with activated charcoal ensures that any anthraquinone compounds in the gel are removed. Healing of radiation ulcers was observed in two patients treated with Aloe Vera cream, although the fresh gel was more effective than the cream. Complete healing was observed, after treatment with fresh gel, in two patients with radiation burns [18].

Characterization and Optimization of Aloe Vera gel

Appearance The Aloe Vera Gel was transparent, glossy, and little bit thick in appearance.

pH

The pH of prepared aloe vera gel was determined by using pH paper. The sample of prepared aloe vera gel put on pH paper and the color change was observed (light green), and that color obtained was matched with the standerd pH scale and the pH was found to be 6.1.

Percentage Moisture Content

Percentage moisture loss from the formulations were determined by the method reported by Devi *et al*. Two gram formulations were weighed accurately and kept in a desiccator containing 50gm anhydrous calcium chloride. After three days, the formulations were weighed. The percentage moisture loss was calculated using the formula as follows:

$$\text{Percentage moisture loss} = \frac{\text{Initial weight - Final weight}}{\text{Final weight}} \text{ X } 100$$

Transparency, smoothness and weight on drying

The 5ml gel formulation taken in the 10ml (BorosilR) test tube and visually checked for its transparency. The smoothness of the gel formulation was tested by rubbing between the fingers and observes whether the gel is smooth, clumped, homogenous or rough. The relative

density of the formulation or weight/ml of the formulation was determined by taking the weight in gm of 10ml formulation & 10ml distilled water using RD bottle.

Viscosity

Viscosity is an important feature to determine the resistance of flow of gel formulation so that it can spread on the skin properly. It was determined with the help of Ostwald viscometer.

Microbial Growth

Nutrient agar media was used in microbial growth study. In this method, the blank and sample (n=3) petri plates were used and the gel samples were aseptically transferred on to the sample plates in a cross pattern. The microbial growth was observed daily for 14 days.

Optimization of gel

One of the main ingredients of the formulation is the gelling agent. The concentration of viscosity enhancer or gel former is of immense value as a less concentration will lead to simple solution or lotion with very low consistency, while high concentration may lead to formation of gels with high viscosity leading to non-uniform distribution of drug and problem with handling of gel. Different gel formers were tried in order to select the best gelling agent. Gels containing aloe vera juice extract and Sodium CMC showed phase separation and were rejected. Aloe vera gels containing 1.0 % of carbomer 934 form a very thin gel that liquefies within 06h of preparation. With 2.0% gelling agent somewhat better gel was obtained but the problem of liquification after 24h was observed. Gel containing 3.0% of carbomer 934 formed uniform and smooth gel that does not liquefy upon keeping. At 4.0 % of carbomer gel was very thick and more sticky that could not be properly spread out. With HPMC the gels formed are poor in consistency and very thick as indicated by spreadability and extrudability values. Thus, 3.0% of carbomer 934 was selected as the optimized concentration of gelling agent. The pH of the formulation was determined in order to be sure that the formulation can be used without the risk of irritancy to the skin. The pH was found to be 6.6 ± 0.5 for gel which was very near to the neutral pH, thus the formulation can be used without the risk of irritancy to the skin. This also indicated that the selected ingredients of the formulation did not alter the pH of the formulation.

Gel stabilization technique

Aloe Vera gel is the mucilaginous jelly obtained from parenchyma cells of the Aloe Vera plant. When exposed to air, the gel rapidly oxidizes, decomposes and looses much of its biological activities. Different researchers have described different processing techniques of the gel with regards to its sterilization and stabilization, i.e., cold processing or heat treatment. However, the fundamental principle underlying these processing techniques remains almost the same.

Regardless of the relative quality of the plant, the best results are obtained when leaves are processed immediately after harvesting. This is because degradative decomposition of the gel matrix begins due to natural enzymatic reactions, as well as the growth of bacteria, due to the presence of oxygen. The entire process involves washing the freshly harvested Aloe Vera leaves in a suitable bactericide, followed by processing of the leaves to mechanically separate the gel matrix from the 20 outer cortex. The separation of the gel from the leaf could be facilitated by the addition of cellulose dissolving compounds, e.g., cellulose. Thus, the aloe liquid obtained is treated with activated carbon to decolourize the liquid and remove aloin and anthraquinones, which have laxative effects. This is especially so if the stabilized gel is to be used as a drink formulation for internal use. The resultant liquid is then subjected to various steps of filtration, sterilization and stabilization.

The stabilized liquid, thus, obtained could be concentrated to reduce the amount of water or, alternatively, almost all of the water removed to yield a powder. In cold processing technique, the entire processing steps are accomplished without the application of heat. Other sterilization steps reported in the cold processing includes exposing the gel to ultraviolet light, followed by a micron filtration. In the heat treatment processing, sterilization is achieved by subjecting the aloe liquid obtained from the activated carbon treatment to pasteurization at high temperature. Aloe corp has reported the biological activity of Aloe Vera gel essentially remains intact when the gel is heated at 65°C for periods less than 15 min.

Heat treatment of gel

The effect of methanol solvent on compositional variations of barbaloin was also taken into consideration. Results show that the polysaccharide from Aloe vera exhibited a maximal stability at 70°C decreasing either at higher or lower temperatures. Heating promoted a

remarkable decrease in barbaloin content depending on temperature and time, more affected than polysaccharide of the gel juice from Aloe vera. Barbaloin is unstable when dissolved in methanol resulting in the transformation into a series of unidentified compounds, in addition to aloe emodin with the period of storage at 4°C in refrigerator.

A diffusion model taking into account sample shrinkage has been proposed and solved by using a finite difference method. The effective diffusivities estimated with the proposed model varied with the air-drying temperature according to the Arrhenius law except for the experiment carried out at 80°C, where case-hardening took place. The three studied functional properties exhibited a maximum when drying temperature was 40°C decreasing either at higher or lower temperatures. Physico-chemical modifications promoted by heat treatment and dehydration at different temperatures (30-80°C) on acemannan, a bioactive polysaccharide from Aloe Vera parenchyma. 21 Modification of acemannan, a storage polysaccharide, was particularly significant when dehydration was performed above 60°C.

RESULTS AND DISCUSSION

The greater part of the world's population relies on traditional medicine for their health care. This is also the case in the treatment of wounds. In developing countries, formulations prepared from plants have been widely used for the treatment of soft tissue wounds and burns by medical personnel trained in western medicine as well as by traditional practitioners.

Table No.3.

Evaluation Parameters	**Results**
Viscosity in Cp	1168
Transparency	Translucent
Smoothness / Roughness	Smooth
Density	10.48
% Moisture Content	94.73%
pH	6.1
Microbial Growth	No Growth

Aloe vera herbal gel prepared from aloe vera leaf extract (liquid) from inner part of leaf, natural ingredients and small amount of synthetic ingredients. Aloe vera liquid extract was prepared by heating inner part of aloe vera leaf at low temperature in order to retain

thermolabile ingredients present in it. The pH of the herbal gel formulation maintained at 6±0.4 so as to make skin compliant formulation.

Viscosity is one of the most important parameter as it reflects the semisolid nature of the formulation and spreadability upon the skin surface. Viscosity of the herbal gel formulations determined with the help of Ostwald Viscometer. The value of viscosity found from 1168 cp (centipoise).

The formulation found to be translucent and smooth in nature which may be due to the composition of the ingredients. Weight before and after drying and density of the formulation was evaluated so as to maintain batch to batch uniformity. Percent moisture loss of the formulation was found to be 94.73%. pH of the formulation were adjusted to 6.1.

Aloe vera herbal gel can be prepared easily with higher quantity of herbal component without using toxic ingredient. It may be produced commercially for cleaning, softening and improving texture of the skin.

CONCLUSION

Nowadays, the research in the field of Herbal Science is going on a large scale, reason behind this, herbs and natural products have very low toxic effects in comparison to synthetic material. Another big reason is their availability in a huge amount at a very low price easily. That's why I choose to work on a miracle herb Aloe Vera. Firstly I studied the detail about theory books of Pharmacognosy and herbal Sciences and for more details I was go through review articles. I formulated and evaluate Aloe vera Gel prepared at Pharmacognosy Lab of Lakshmi Narayan College of Pharmacy, Bhopal.

The pharmacological attributes of Aloe vera have been revalidated in modern sciences through various in vivo and in vitro studies. These scientific studies are good enough proof that drug has immense potential as a dental therapeutic. So proper diagnosis, knowledge of the traditional medicine, and implementation of that knowledge to the treatment plan are important in ensuring success with this dental therapeutic agent.

As a footnote, though Aloe vera is a promising herb with its various clinical applications in medicine and dentistry, the authors feels that more clinical research needs to be undertaken especially to validate and explain the action of acemannan hydrogel in accelerating the

healing of aphthous ulcers and to validate the efficacy of Aloe gel on plaque and gingivitis so that it can be established in the field of dentistry.

I concluded that the use of Aloe Vera Gel in Various Skin diseases like dermatitis, eczema, Acne etc, various skin allergic conditions such as rashes, redness etc, in inflammation conditions and many more conditions it is very effective with low side effects and excellent results. In today's scenario the popularity of Aloe vera Gel is being increased day by day.

REFERENCES

1. Trease and Evans C Williams; Pharmacognosy, 16th edition pg no. 265-268.
2. Gupta Udit, Omray LK, Patil S, Kharya AK, Gajbhiye A, Chaturvedi S, Agrawal GP Development of aloe vera cosmetic herbal hydrogel formulation, International Herbal Conference 2009.
3. Row, T.D. and L.M. Parks, 1941. Phytochemical study of aloe Vera leaf. J. Am. Pharm. Assoc., 30: 262-266.
4. Mortan, J.F., 1961. Folk uses and commercial exploitation of Aloe leaf pulp. Econ. Bot., 15: 311- 319.
5. Freytag, A., 1954. Suggested role of traumatic acid in Aloe wound healing. Pharmzie, 9: 705 (PUBMED) (INFORTIEVE).
6. Afzal, M., Ali, M., Hassan, R.A.H., Sweedan, N., Dhami, M .S.I., 1991. Identification of some prostanoids in Aloe Vera extracts. PlantaMedica 57, 38–40.
7. Agarwal, O.P., 1985. Prevention of atheromatous heart disease. Angiology, 36, 485– 492.
8. Kokate C.K., A.P. Purohit, S.B. Gokhale; Pharmacognosy, 35th edition, pg. no.181- 185.
9. Agarwal, O.P., 1997. Whole leaf aloe gel vs. standard aloe gel. Drug and Cosmetics Industry February, 22–28.
10. Ahmad, S., Kalhoro, M.A., Kapadia, Z., Badar, Y., 1993.Aloe' a biologically active and potential medicinal plant. Hamdard Medicus 36, 108–115.
11. Ajabnoor, M.A., 1990. Effect of aloes on blood glucose levels in normal and alloxan diabetic mice. Journal of Ethnopharmacology, 28, 215–220.
12. Davis, R.H., Leitner, M.G., Russo, J., 1988. Aloe Vera. Anatural approach for treating wounds, edema, and pain indiabetes. Journal of the American Podiatric Medical Association78, 60–68.
13. Dixit, V.P., Joshi, S., 1983. Effect of Aloe barbedensis and clofibrate on serum lipids in triton induced hyperlipidaemiainPresbytis monkeys. Indian Journal of Medical Research 78, 417–421.
14. Bruneton J.; "Pharmacognosy, Phytochemistry of Medicinal Plants"; 2nd Edition; Lavoisier Publishing, Paris; 1993; 363-364
15. Udupa S.I., Udupa A.L., Kulkarni D.R. Anti-inflammatory and woundhealing properties of Aloe vera, Fitotherapia, 1994, 65: 141-145.
16. Rajendran A, Narayanan V, Gnanavel I Photochemical and Electrochemical Stabilities of Aloe Vera Sap Journal of Applied Sciences Research, 2007; 3:1871-1878.
17. Amar S, Resham V, Saple DG Aloe Vera: A short review. Indian J Dermato2008; 53:163-166.
18. Marshall JM. Aloe vera gel: What is the evidence? Pharma Jr. 1990;24:360–2.
19. Davis RH. Aloe vera: A scientific approach. New York: Vantage Press.
20. Tyler V. The honest herbal: A sensible guide to the use of herbs and related remedies. 3rd ed. Binghamton, New York: Pharmaceutical Products Press; 1993.
21. Atherton P. Aloe vera revisited. Br J Phytother. 1998;4:76–83.
22. Shelton M. Aloe vera, its chemical and therapeutic properties