International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 2 Mar-Apr 2022, pp: 518-521 www.ijprajournal.com ISSN: 2456-4494

Formulation and Evaluation of Herbal Gel of Alcoholic Extract of Aloe Barbadensis Miller

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Submitted: 15-03-2022 Accepted: 23-03-2022

ABSTRACT

The aim of the study is to formulate and optimize an herbal gel of Aloe Vera extract containing Carbopol 940 as gelling agent and to investigate the effects of topical application. 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. Products of this plant are used in the treatment of various ailments. Aloe Vera is an ancient, natural ingredient that would be hailed as a major scientific breakthrough if it came out of a modern drug lab. It coats, soothes, and can even heal ulcers and irritations. Aloe Vera has been used in dentistry for its wound-healing effects, gingivitis, plaque control and curing oral mucosal lesions.

KEYWORDS: Aloe Vera, Herbal gel, Spreadability, Organoleptic.

I. INTRODUCTION:

The Aloe Vera plant has been known andused for centuries for its health, beauty, medicinal and skin care products. The name Aloe Vera derives from the Arabic word -Alloeh meaning -shining bitter substances, while –Vera in Latin means –true. 2000 years ago, the Greek scientists regarded Aloe Vera as the universal panacea. 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. Among the various currently available herbal agents the most popular and currently receiving a lot of scientific attention is Aloe Vera. It is perennial succulent xerophytes, which develops water-storage tissue in leaves to survive in dry areas of low or erratic rainfall[1].

The plant has stiff grey-green lance-shaped leaves containing clear gel in a central mucilaginous pulp. Benefits associated with Aloe Vera have been attributed to the polysaccharides contained in the gel of the leaves. Numerous studies on Aloe Vera are being done to demonstrate the antiviral, antibacterial, analgesic, anti-inflammatory and wound healing 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.

This tissue is recovered from the leaf by separating the gel from the inner cellular debris [2]. Aloe Vera plant has also been known as "the healing plant". Aloe Vera has been used for traditional medicinal purposes in several cultures for millennia, [3][4]. It has been demonstrated that Aloe Vera has growth promoting activities. Recently anti- fungal properties of aloe Vera leaves were investigated by Casian[5].In vitro, extracts or components of Aloe Vera stimulate the proliferation of several cell types. Many studies have shown that treatment whole Aloe Vera gel, extracts resulted in faster healing of wounds.[6][7][8][9]

II. MATERIALSANDMETHODS[10]

Plant Materials

Collection, identification and authentication of raw Aloe barbadensis Miller was done. Fresh leaves of Aloe barbadensis Miller were collected from Dhanalakshimisrinivasan college of pharmacy, Perambalur. Collected leaves are authenticated by Botanist, Department of botany, national college, trichy. Then the leaves are cleaned properly and shade dried at room temperature.

Cold maceration process of leaves of Aloe Barbadenesis Miller

The collected,cleaned and shade dried leaves are subjected to the size reduction and Seived. Then the aloe vera extract are prepared by cold maceration process. About 40gm of dry powdered aloe vera are taken with 250ml of 70% (W/V) Ethanol are maceration for week in a round bottom flask with occasional shaking.

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The flask was kept in the dark to avoid effect of the light on the active constituents of the Aloe vera . Then the extract are filtered through a muslin cloth aftet a week of maceration. The extract are concentrate till dryness. The use of water bath maintain the room temparature the extract are heated for evaporation till the gryness.

Fig no:1 Cold maceration Process Fig no:2 Crude Extract

Table no:1 List of Chemicals

S.NO	Chemical Name	Company name
1	Carbopol 940	Kemphasol
2	Propylene glycol	Nice
3	Methyl paraben	Merck
4	Trienthanolamine	Merck

Method of Preparation[11]

Accurately weighed Carbopol 940 was taken ina a beaker and dispersed in 50 ml of distilled water. Kept the beaker aside to swell the Carbopol for half an hour. Take 5 ml of Propylene glycol and required amount of extract. Take 5ml of Proipylene glycol in another beaker and add weighed quantity of methyl parabento it and stirred properly. After allCaropol dispersed, 1 gm extract and preservatives solution were added with constant stirring. Finally Triethanolamine were added drop wise drop in the formulation to obtain the gel at required consistency.

Table no:2 Formula for Gel

S.NO	INGREDIENTS	FORMULATION	
		F1	F2
1	Aloe vera (gm)	1	1
2	Carbopol 940 (gm)	1	1.5
3	Propylene glycol (ml)	10	10
4	Methyl paraben (gm)	0.2	0.2
5	Triethanolamine (ml)	q.s	q.s
6	Distilled Water (ml)	100	100

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EVALUATION OF GEL[12]

Physical properties of Gel

The formulated gel was evaluated for its Organoleptic like color, state and odor. The appearance of gel was analyzed by its color and roughnesses are examined by visually and by touching.

Measurement of pH

The pH of various gel formulation were determined by using digital pH meter, 2.5 gm of gel was weighed accurately and dispersed in 25 ml of distilled water and stored for 2 hours and measure the pH.

Spreadability

The spreadability of the gel formulation was determined by measuring the spreading diameter between of 1 g of gel between two horizontal plates (20 cm x 20 cm) after one minute. The standard weight applied on the upper palte was 125g.

Spreadability = m×l/t

m =Weight tide to upper slide,

l = Length moved on glass slide,

t = Time taken to separate.

III. RESULT AND DISCUSSION

The herbal aloe vera gel was prepared and subjected to evaluation of the various parameters. The herbal aloe vera gel was brown in color and transluecent in apperance and had a cool and smooth feeling on applictaion. pH also maintained constant throughout the study which was found to be 7.2-7.5 and the gel was non-irritant upon application on the skin. Spredadbility were also measured.

Physical properties of Gel

The formulated gel is evaluated for its organoleptic properties like color, odor and state. The formulated gel are semi-solid in nature, odor are occur and brown in color. The textures of gel are smooth and homogeneity. By visual appearance and touch it's confirm that all formulation produce a uniform distribution of extract in gel.

Table no:3 Physical properties of Gel

S.NO	Specification	Limit
1.	State	Semi-solid
2.	Color	Brown
3.	Odor	Unpleasant
4.	Texture	Smooth

Determination of pH

The pH of the gel was found to be in range of 7 to 8 which is good for skin pH. All the herbal formulations of gel were shown pH nearer to the skin required. i.e. F1 -7.2 and F2 -7.5. The observed pH is near to the skin pH.

Table no:4 Determination of pH

S.NO	Formulation code	pH
1.	F1	7.2
2.	F2	7.5

Determination of Spreadability

The Spreadability plays a considerable role in patient compliance and uniform application of gel to a larger area of the skin. The low value of Spreadability coefficient of the gel was sufficient suggesting easy spreading. The lower value of Spreadability indicates the lesser work required to spread the gel over the skin, which means formulation was easily spreadable by applying small amount of shear. The Spreadability test showed that formulation has good spreadable property.

Table no: 5 Determination of Spreadability

S.NO	Formulation	Time in seconds	Spreadability(cm/sec)
1.	F1	20	19.37
2.	F2	22	20.56

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IV. CONCLUSION

Formulation of herbal aloe vera gel was successfully developed that met the relevant pharmaceutical characteristics. The prepared formulations shows the good spreadability and good consistency during the study period. Stability parameters like visual apperance, nature and pH of the formulations showed that there was no significant variation during the study period.

REFERENCES

[1]. Hitavada :21st July – 2009;pg.no.2
[2]. C.P. Khare, Encyclopedia of Indian Medicinal Plants; pg.no. 43-45.
[3]. A.N. Kalia; Test book of Industrial Pharmacognosy; 1st edition; pg no. 67-69, 241-243.
[4]. Phytopharma; Volume-6, no. -6, June 2005 pg no. 3-22.
[5]. E.EdwinJarad; Text book of Pharmacognosy; 1st edition; pg no. 335-339.
[6]. Tyler, Brady &Robberss; Pharmacognosy; 8th edition; pg no. 60-63.
[7]. Vinod D. Rangari; Pharmacognosy and Phytochemistry. 1st edition; pg no. 264-271.
[8]. T.E. Wallis; Text book of pharmacognosy 5th edition; pg no. 449-457.
[9]. Indian herbal pharmacopoeia: Revised New Edition-2002: pg no. 449-457
[10]. **Khan, A. Dhawan**, and **M. D. Ansal**, 'Effect of Aloe vera supplemented feed on survival and growth of common carp (Cyprinus carpio L.),'Indian Journal of Animal Nutrition, vol. 35, no. 2, pp. 206-213, 2108.
[11]. Niyogi P., Raju N.J., Reddy P.G., Rao B.G. Formulation and evaluation of anti-inflammatory activity of Solanum Puberscens Wild extracts gel on albino Wister ears, Int.J.Pharm.2012:2(3):484-490.
[12]. Mishra U.S., Muthy P.N., Pasa G., Naya R.K. Formulation and evalution of herbal gel containing methanolic extract of Ziziphus Xylopyrus. IJBPR.2011:1(4): 207-218.