

Phytochemical Screening and Preparation of Vanishing Cream from Leaves of *Acacia Nilotica*

Chetana.V. Bugadikattikar*, Somesh Shintre, Dr. M.S.Bhatia
Bharati Vidyapeeth College of Pharmacy, Kolhapur, Maharashtra, India

Corresponding Author:

Chetana.V. Bugadikattikar*, Somesh. Shintre, Dr.M.S.Bhatia.
Pharmaceutical Chemistry Department,
Bharati Vidyapeeth College of Pharmacy, Kolhapur, Maharashtra, India

Abstract:- *Acacia Nilotica* is a green leafy vegetable native to India. Acacia leaves having antibacterial property with numerous health benefits. They contain some medicinal properties such as antioxidant, antimicrobial, anti-fungal, and with anti-viral properties. The aim of this study was to investigate the antibacterial effects of acacia-*Nilotica* leaves by making a topical creams formulation containing acacia leaves extract and Benzoic acid and in combination and evaluate the *in vitro* antibacterial activity of those formulations.

Keywords:- *Acacia Nilotica*, antibacterial property, topical formulation, phytochemical screening, leaves extract,

➤ Abbreviations:

E. coli -	Escherichia coli
FT -	Formulation Table
Mg -	Milligram
Hrs. -	Hours
Fig No. -	Figure number
H/C Cycle -	Heat and Cool Cycle
ml -	mill liter
gm -	gram

I. INTRODUCTION

Acacia Nilotica is a nature sources, whole plant used for making herbal medicine since a many years. From that it was used for many types of formulations such as antibacterial, antimicrobial, diabetic and etc. Plant having antimicrobial property that kills the micro-organism. Each

C. Phytochemical screening:

Phytochemical	Tests	Water	Alcohol	Acetone
Alkaloids	Mayer's test	+	-	-
	Dragendorff's test	-	+	+
Anthraquinones	Borntrager's test	-	-	-
Glycosides	Fehling's solution	-	-	-
Flavonoids	Alkaline reagent tes	+	-	+
Saponins	Froth test	+	+	+
Tannins	FeCl ₃ test	+	+	+
	Lead acetate test	-	+	-

Table 1:- Evaluation parameters of *Acacia* plant extract by using different solvent

part of plant having own property to cure many types of diseases, like toothache. It is used in tooth pastes. By comparison of others types of formulation cream is very essential for the topical use. Cream is semisolid formulation so it is easy to use and apply and rapidly absorbs in mucous membrane having low fat moisturizer which disappears into the skin is call vanishing cream. Because of low moisturizer the rate of bacterial growth is decreases. So it's very useful for the kills the bacterial growth.

II. MATERIALS AND METHODS

A. Materials:

The leaves of *Acacia Nilotica* were collected from the local area of Mahagaon, site Chinchevadi, Gadhingaj, and other cream bases are collected from the laboratory of SGMCP.

B. Methodology: (Extraction procedure)

Fresh and healthy leaves were chosen, washed with potable water thoroughly, and shade-dried at room temperature. The dried leaves were crushed to make fine powder which passed through mesh size 60. The phytoconstituents of *acacia nilotica* extraction was done by hot solvent extraction (Decoction) method by using separately three solvents, water, alcohol and acetone. 14 gram of fine powder dissolve in 200 ml of each solvent then heated for 4 to 5 hours. Then filter the extract and then concentrated and place in freezer for 2 weeks to remove water content and then dry at room temperature. After drying the dried extract was powdered by using mortar and pestle. [7]

D. Method of Preparation^[8]

Steps for the preparation of vanishing herbal cream were as follows.

➤ *Preparation of water extract:*

14 gram of dried leaves powder was taken into the beaker and then add 200ml. of water into it, then the beaker was covered with aluminum foil. This mixture was placed for decoction process for 5-6 hours.

➤ *Preparation of acetone extract:*

14 gram of dried leaves powder was taken into the beaker and then add 200ml. of acetone into it, then the beaker was covered with aluminum foil. This mixture was placed for decoction process for 5-6 hours.

➤ *Preparation of alcohol extract:*

14 gram of dried leaves powder was taken into the beaker and then add 200ml. of alcohol into it, then the beaker was covered with aluminum foil. This mixture was placed for decoction process for 5-6 hours.

➤ *Formulation table:*

Sr. No.	Ingredients	FT01 (gm)	FT02 (gm)	FT03 (gm)	FT04 (gm)
1.	Nilotica Leaves Extract	2.5	2.5	2.5	2.5
2.	Benzoic acid	10	10	10	10
2.	Stearic acid	25	20	17	18
3.	Glycerin	5	5	3.5	3
4.	Lanolin	5	5	2.5	2
5.	Triethanolamine	1	1	1	1
7.	Preservative	1	1	1	1
8.	Perfume	QS	QS	QS	QS
9.	distilled Water	40	45	50	50

Table 2:- Cream formulation

E. Evaluation Parameters➤ *Determination of organoleptic properties*

1 gram of cream is taken in a clean petri plat and observes visually, the appearance of the cream was compared with its color and roughness of cream.

➤ *Microbiological studies:*

Evaluation study of final topical formulation with broad, non-resistance promoting activity against staphylococci, E-coli or yeast or molds can be great use in dermatology preparation were infections are often mixed. Formulation containing the antimicrobial agents which protect from microbial growth. To determine the activity of formulation is subject to study the prepared formulation with standard method called standard cup plate method and the inhibition zone diameters were measured with the help of zone reader. peptone agar media was used for aerobic culture for determination of inhibition and this incubated at temperature of 37° C for 48 hours.

➤ *Preparation of cream:***Step: 1** Preparation of oil phase:

Stearic acid and Lanolin was taken into one porcelain dish and mixture was melted at 75°c on burner.

Step: 2 Preparation of aqueous phase:

Water, glycerin, triethanolamine and Benzoic acid were taken into small beaker and heat this mixture at 75°c on burner.

Step: 3 Addition of aqueous phase to oil phase:

- The aqueous phase was added into the oil phase with continuous stirring at 75°c maintain the temperature of both phases.
- Once the transfer was completed it was allowed to stand for room temperature, then add extracted dried powder into it.
- If required perfume was added at last just before the finished product was transfer to suitable container.

Then the final formulation of cream was evaluated for various physical parameters.

➤ *Determination of homogeneity:*

The formulations were tested by visual appearance and by touch.

➤ *Determination of emolliency:*

Emolliency, slipperiness and amount of residue left after the application of fixed amounts of cream was checked.

➤ *Determination of type of emulsion*• *Dilution test: -*

In this test the emulsion is diluted with either oil or water. If the emulsion is oil in water type was diluted with water, it was remaining stable as water is the dispersion medium" but if it is diluted with oil, the emulsion will break as oil and water phase which is not miscible with each other. Oil in water

Emulsion can easily have diluted with an aqueous solvent, whereas water in oil emulsion can be diluted with an oily liquid.

- **Dye solubility test:** -

In this test a cream is mixed with a water soluble dye (amaranth) and observed under the microscope. If the emulsion is o/w type continuous phase appears red, it means that the water is in the external phase and the dye will dissolve in it to gives red color. If the emulsion is w/o type, then scattered globules appear red and continuous phase colorless. Similarly, for the Scarlet Red C or Sudan III.

III. RESULTS AND DISCUSSION

The study was carried out on antimicrobial activity for final formulation of prepared vanishing cream and phytochemical screening of Ethanolic extracts, Aqueous extracts and Acetone extract of *Acacia nilotica*. All formulations were evaluated for physical parameters. Cream not developed successfully in the initial trials, due to concentration of ingredient added in the formulation. Trial no. 1 and 2 were found to be physically not good, due to more hardness/ and softness of formulation, also found to be not stable in heating and cooling studies i.e problem of phase separation, hence same was not proceed for further studies. Only those formulations 3 and 4, which showed no phase separation, turbid, cracking, coalescence, and phase separation during stress stability tests, were selected for further studies. The results of physical stability studies were shown in FT 3 and 4

Physical Parameter	Observation
Appearance	Pale green
Spread ability	Easily spreadable
Wetness	Moisturizes skin surface
Homogeneity [A] By visual [B] By Touch	Homogeneous Smooth and Consistent
Dilution test	O/W type emulsion
Emolliency	No residue left
Dye solubility Test	O/W type emulsion

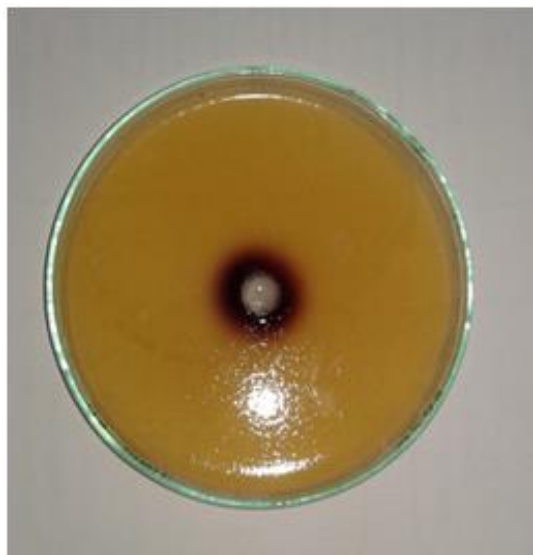
Table 3:- Physical parameters of Vanishing Cream formulation of 3 & 4 found as above

Trial No.	H/C Cycle	Centrifuge	Freeze thaw	Results
Formulation 01	↓	↓	↓	Fails
Formulation 02	↓	↓	↓	Fails
Formulation 03	↑	↑	↑	Passes
Formulation 04	↑	↑	↑	Passes

Table 4:- Stability studies of prepared formulation

Formulation	Boar Size	Staphylococcus aureus	Escherichia coli
Formulation 03	0.4 cm	6 mm	4 mm
Formulation 04	0.4 cm	7 mm	4 mm

Table 5:- Microbial studies for Formulation 03 and Formulation 04 (Zone of Inhibition in mm.)



E.Coli Formulation. 3

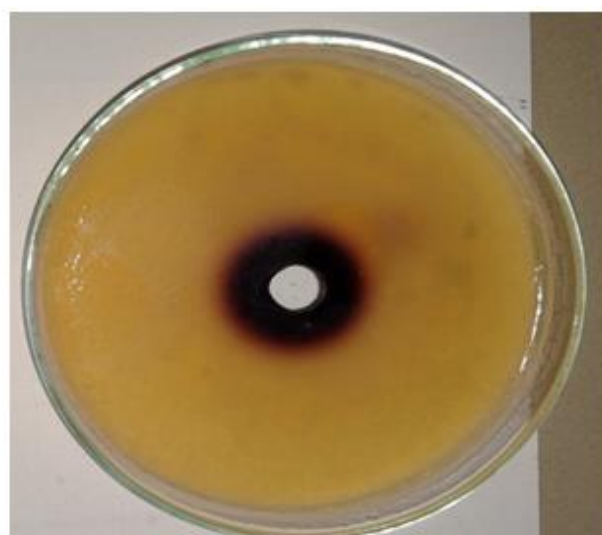


Staphylococci Formulation. 03

Fig 1:- Zone of inhibition of organisms such as E. coli. and Staphylococci of Formulations 3



E. coli Formulation. 04



Staphylococci Formulation. 04

Fig 2:- Zone of inhibition of organisms such as E. coli. and Staphylococci of Formulations 4

By analyzing & observing the above formulation parameters it is found that the formulation 1 & 2 not shown any effect & the formulation 3 & 4 gives good physicochemical properties as well as good zone of inhibition of staphylococcus aureus & ecoli organism, that shows acacia extract formulation have good antibacterial activity.

IV. CONCLUSION

The present study was focused on activity of acacia plant extract in the form of cream dosage form, as antimicrobial action on organisms in laboratory scale, although it shown good zone of inhibition by spreading extract formulation through media and inhibit the organisms activity, that indicates the acacia has a better antimicrobial activity, In future days the preparation of other dosage form by using phytoconstituents of such

acacia extract, that may give the better role in skin related infections caused by fungus or bacteria like redness, edema etc.

- *Ethics Approval and Consent to Participate*
Not applicable.
- *Human and Animal Rights*
No Animals/Humans were used for studies that are basis of this research.
- *Consent For Publication*
Not applicable.
- *Conflict Of Interest*
The author declares no conflict of interest.

ACKNOWLEDGEMENT

We are thankful to Principal, and staff of Sant Gajanan Maharaj College of Pharmacy, Mahagaon for providing excellent facilities to carry out work.

REFERENCES

- [1]. Ncube NS, Afolayan AJ, Okoh AI. Assessment techniques of antimicrobial properties of natural compounds of plant origin: Current methods and future trends. *Afr J Biotechnol* 2008;7:1797-806.
- [2]. Husain SZ, Malik RN, Javaid M, Bibi S. Ethnobotanical properties and uses of medicinal plants of Morgah Biodiversity Park, Rawalpindi. *Pak J Bot* 2008;40:1897-911.
- [3]. Malviya S, Rawat S, Kharia A, Verma M. Medicinal attributes of *Acacia nilotica* Linn. - A comprehensive review on ethnopharmacological claims. *Int J Pharm Life Sci* 2011;2:830-7.
- [4]. Shah SR, Hassan G, Rehman A, Ahmed I. Ethnobotanical studies of the flora of district Musakel and Barkhan in Balochistan, Pakistan. *Pak J Weed Sci Res* 2006;12:199-211.
- [5]. Efficacy of *Acacia nilotica* Extracts Towards Microbicidal Activity against Pathogens Rwarinda U Angelo* Department of Biotechnology, Prist University, Thanjaur, India *Int.J.Curr.Microbiol.App.Sci* (2015) 4(10): 33-42
- [6]. Das K, Dang R, Machale MU, Ugandar RE, Lalitha BR, 'Evaluation for safety assessment of formulated vanishing cream containing aqueous Stevia extract for topical application', *Indian Journal of Novel Drug Delivery*, 4(1), Jan-Mar, 2012, 43-51
- [7]. Practical pharmacognocny techniques & experiment by Dr Khandelwal. K.R Nirali Prakashan 19th edition March 2008 page no 184qw
- [8]. Sahu Alakh N, Jha SB and Dubey SD, 'Formulation & Evaluation Curcuminoid Based Herbal Face Cream', *Indo-Global Journal of Pharmaceutical Sciences*, 2011, Vol 1, Issue 1: Page No. 77-84.
- [9]. Ravindra RP and Muslim PK, 'Comparison of physical characteristics of vanishing Cream base, cow ghee and shata-dhautaghrita as per pharmacopoeial standards', *International Journal of Pharma and Bio Sciences*, 2013 Oct; 4(4): (P) 14 – 21.
- [10]. Parmar RB, Baria AH, Faldu SD, Tank HM, Design and Evaluation of Poly-herbal Formulation in Semisolid Dosage Form for its Antibacterial Activity, *Journal of Pharmacy Research* 2009 ; 2:1095-1097.
- [11]. Parashar B, Kabra A, Chandel A, Formulation and evaluation of gel containing miconazole nitrate an antifungal agent, *International journal of pharma research and review* 2013; 2: 8-28.
- [12]. Ashwini S. Dhase*, Somishwar S. Khadbadi and Shweta S. Saboo 'Formulation and Evaluation of Vanishing Herbal Cream of Crude drugs' Government College of Pharmacy, Aurangabad *American Journal of Ethnomedicine*, 2014, Vol. 1, No. 5, 313-318
- [13]. © American Journal of Ethnomedicine.

- [14]. Ravindra RP and Muslim PK, 'Comparison of physical characteristics of vanishing Cream base, cow ghee and shata-dhautaghrita as per pharmacopoeial standards', *International Journal of Pharma and Bio Sciences*, 2013 Oct; 4(4): (P) 14 – 21.