IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Aro-Fresh Herbal Deodorant Stick: Combines Freshness With Herbal Focus

Vasudha C, Pratik Kanti Nath, Rashmi S, Yashaswini Manjunath, PavanaShree C N, Snigdha S Babu

Department Of Pharmaceutics, Aditya Bangalore Institute Of Pharmacy Education & Research,Yelahanka, Bangalore-560064

ABSTRACT

Herbal deodorant inhibit the growth and activity of bacteria that humiliate the apocrine gland. The effective of antibacterial properties, acts on antibacterial agents such as triclosan lead to increase the risk of prostate cancer. Herbal plant extracts with antibacterical properties. This research study was carried out by opting the sunflower wax, olive oil, champaka oil, castor oil & chamomile oil. Chamomile oil & sunflower wax acts on antibacterial properties. Herbal deodorant stick were prepared & characterized for physical obervations, pH, Softening point, Breaking point, Spreadability, Stability test, Antibacterial activity were conducted using standard protocols.

KEYWORDS: Deodorant, Herbal, Odor, Stability, Sweat.

INTRODUCTION

The broad definition of cosmetics includes "a diverse array of products designed to enhance, alter, or maintain the appearance and health of skin, hair, nails, and overall physical appearance." They cover a wide spectrum of formulation and application, from basic personal hygiene and skin care to advanced makeup artistry, all of which improve a person's appearance and feeling of expression. Plant-based, natural beauty and skin care products called herbal cosmetics enhance, maintain, or alter a person's appearance while promoting the well being and health of their skin. Archaeologists unearthed palettes with remnants of blended pigments dating from some 100,000 years back, which were probably used for cave painting and body adornment. In ancient cultures, makeup had a major place in everyday life. They also used them to cover body odours. Herbal formulations involve using plants, plant parts, or extracts for therapeutic, cosmetic, or health-promoting purposes. Plants harbor a plethora of compounds like alkaloids, flavonoids, terpenoids, glycosides, and essential oils, which confer therapeutic or functional benefits. For instance,

turmeric (Curcuma longa) is valued for curcumin's anti inflammatory properties, neem (Azadirachta indica) is prized for its antimicrobial actions, and aloe vera (Aloe barbadensis) is cherished for its skin-soothing attributes.

DEODORANTS

A deodorant is a personal care product specifically formulated to eliminate or mask body odour caused by bacterial growth on the skin. Particularly in areas prone to sweat. Deodorants focus on neutralizing odour, often incorporating antimicrobial agents and fragrances to keep the user feeling fresh and confident throughout the day. A herbal deodorant is a natural personal care product crafted from plant-based ingredients and botanical extract, designed to neutralize body odour without the use of synthetic chemicals. For instance, isovaleric acid is one chemical substance responsible for sweat's odour. There are several ways to reduce odours, including practicing basic hygiene (washing). These representatives are growing in popularity as more and more consumers choose natural items over manufactured ones these days. for their own self-care to improve their appearance because these items provide the body with nutrition, improve health, and bring joy because they don't contain artificial ingredients and, in comparison to synthetic cosmetics, have comparatively fewer adverse effects.

Body odour

Human axillary odour is typically linked to the bacterial breakdown of precursors in sweat secretions. Other factors that may contribute to body odour include genetics, environment, hygiene, and the use of cosmetics. These factors can also affect the types and quantity of bacteria that are present on skin, which can affect body odour. The greatest organ that serves as a barrier between an organism and its surroundings is skin. The common explanation for human underarm odour is bacterial breakdown of precursors in sweat secretions. Foulness can result from a variety of reasons, including age, sex, genetics, ambient conditions like stress or temperature, grooming, and the use of cosmetics, which can alter the species of bacteria on the skin and the amount and consistency of secretions produced.

Advantages of Herbal Deodorant Stick

- They also allow for healthy sweat function, unlike aluminium-based synthetics that block pores.
- Natural deodorants provide effective odour control using antimicrobial agents like tea tree oil

DRUG PROFILE

1. CHAMOMILE OIL

Scientific Name: Matricaria chamomilla

Family: Asteraceae

Class: Magnoliopsida (diocotyledons)

Chemical constituents: Chamomile contains α-bisabolol, Chamazulene (3-18%), Apigenin (2-5%), Luteolin (2-5%), Sesquiterpenes (10-20%).

2. SUNFLOWER WAX

Scientific Name: Helianthus annus

Family: Asteraceae

Class: Magnoliopsida

Chemical constituents: The components include fatty alcohols like octacosanol and hexacosanol, fatty acids such as palmitic and stearic acid, and various esters formed from these alcohols and acids.

3. OLIVE OIL

Scientific Name: Oleaeuropea

Family: Oleaceae

Class: Magnoliopsida

Chemical constituents: Glyceryl esters of oleic, palmitic, linoleic, stearic, and myristic acids.

4. CASTOR OIL

Scientific Name: Ricinus communis

Family: Euphorbiaceae

Class: Magnoliopsida

Chemical constituents: Fatty acid composition such as Ricinoleic acid (85-95%), Linoleic acid (3-4%), Oleic acid (2-4%), Stearic acid (1%), Palmitic acid (1%).

5. CHAMPAKA OIL

Scientific Name: Michelia champaca

Family: Magnoliaceae

Class: Magnoliopsida

Chemical constituents: β-Elemene (0.23% to 38.76%), β-Caryophyllene (0.03% to 20.70%), αHumulene, γ Muurolene (0.31% to 22.48%), Linalool, and Methyl eugenol.

AIM AND OBJECTIVE

- To conduct a review of the literature on plants with antibacterial activity.
- To avoid harmful chemicals like triclosan and aluminium salts, which have been linked health risks and to offer a natural, chemical-free deodorant stick.
- To incorporate antibacterial herbs to reduce bacterial growth on skin

MATERIALS AND USES

1. CHAMOMILE OIL

- Soothes and calms skin irritations. Reduces inflammation and redness.
- Anti-microbial properties combat bacteria and odour.

2. SUNFLOWER WAX

- Emollient: softens and smooths skin texture.
- Thickening Agent: Enhances deodorant texture and stability.

3. OLIVE OIL

- Natural antioxidant, Hypoallergenic and non-irritating
- Emollient properties for smooth application.

4. CASTOR OIL

- Odor control: Castor oil's antimicrobial properties help reduce body odour.
- Skin health: anti-inflammatory and moisturizing properties soothe and protect skin.
- Natural preservative: replaces synthetic preservatives, extending shelf life.

5. CHAMPAKA OIL

- Mood-enhancing and emotional balancing effects.
- Anti-aging and wrinkle reduction benefits.
- Skin hydration and moisturizing properties.

FORMULATION METHOD

METHOD OF PREPARATION OF DEODORANT STICK.

The Ingredients were weighed as per mentioned in (table.no 2). sunflower wax and olive oil were taken in a China dish and placed into a water bath, which was set to 75°C for 4 - 5 minutes. Careful attention was paid to this process to ensure that the temperature is not too high. On confirming the complete melting of sunflower wax, it is removed from the water bath; chamomile oil, castor oil, and champak oil were added dropwise. The mixture was blended gently. Once the mixture is cooled, the liquid mass is then decanted into the pre-lubricated container and allowed to settle for 24 hours. Different concentrations of sunflower wax were used to check its physical stability.

Table no 1: Composition of Deodorant Stick

SL NO	INGREDIENTS	DS1	DS2	DS3
1	Chamomile oil	1.25ml	1.45ml	1.65ml
2	Sunflower Wax	3.93g	3g	2.4g
3	Olive oil	8.69ml	9.45ml	9.85ml
4	Castor oil	0.05ml	0.05ml	0.05ml
5	Champaka oil	q.s	q.s	q.s

Fig.no 1:Deodorant Stick 1

Fig.no 2: Deodorant Stick 2

Fig.no 3:Deodorant Stick 3

EVALUATION TEST FOR HERBAL DEODORANT STICK

Evaluation test such as Physical observation, pH test, Softening point test, Breaking load test, Spreadability determination, Stability test and Antibacterial study were conducted using standard protocols.

Physical observation

Examining a deodorant stick's look, colour, texture, scent, and odour is known as physical observation. A visual examination offers important information about the quality, texture, and look of items, guaranteeing a premium deodorant stick that lives up to customer expectations.

Table no 2: Physical observation of formulated deodorant sticks

SI NO	Formulation	Appearance	Colour	Odour	Texture	Fragrance
1	DS1	Dull	Light Green	Pleasant	Smooth	Mild
2	DS2	Glossy	Green	Pleasant	Smooth	Strong
3	DS3	Glossy	Green	Pleasant	Smooth	Strong

Physical observation of DS1, DS2 and DS3 were studied and the results are tabulated in table no 1.3. The results indicate that the formulated Deodorant stick 2(DS2) had compatible physical observation which was comparable with that of the Deodorant stick 1(DS1) and Deodorant stick 2(DS2).

pH

The pH of the skin beneath the arms is 4–6.8, which is different from the pH of the skin physiology in general, which is around 4.5–6.5. To calibrate the pH meter, a standard buffer solution is used. One gram of deodorant was dissolved in fifty milliliters of distilled water to create the deodorant solution, which was then left for two hours. The pH of the resulting solution was then determined using a digital pH meter.

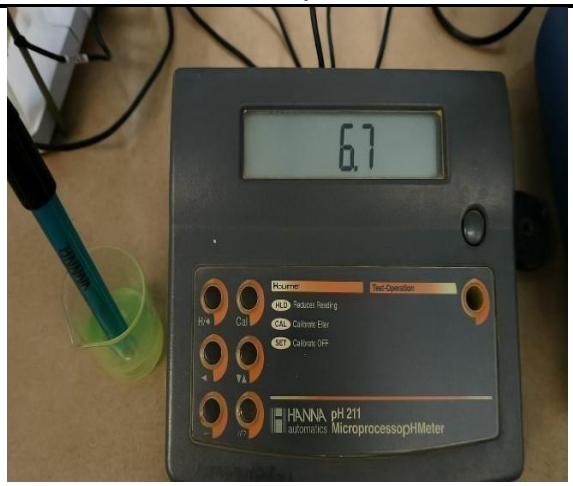


Fig.no 4: pH Meter

pH of prepared herbal deodorant stick was measured by using digital pH meter and the obtained result is 6.7.

Softening point

In warmer climates, the softening point is important, particularly when handling, storing, and displaying in a pharmacy window. The temperature at which the stick loses its usefulness is known as the softening point. The stick was sliced in half lengthwise, placed vertically in petri dishes, and then placed in an incubator for this test. After that, it was watched while the temperature was gradually increased until the slides' and tip's sharp edges started to melt or round off.

The softening point test was performed for herbal Deodorant Stick. The result shows that the tip’s of deodorant start get melted at 78°C.

Breaking point

A laboratory test called the breaking point test, sometimes referred to as the "break test" or "flexural test," is used to assess the mechanical strength and flexibility of solid products like deodorant sticks. A test in which the weight on the stick is gradually increased until it breaks The operation is normally done in a series of weight increases of 10 grams each after every 30 seconds. The breaking point is defined as the highest weightthat the stick can hold without breaking. This test determines the deodorant stick's strength and stability so that it can sustain typical handling and use without breaking.

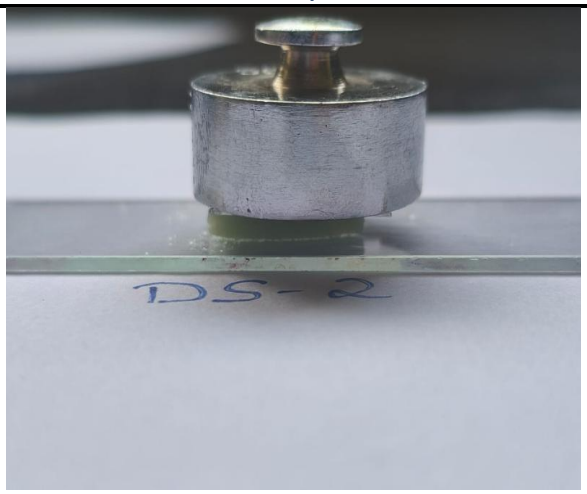


Fig.no 5: Breaking point

Breaking point for Herbal Deodorant stick as performed. The prepared herbal deodorant stick can hold 50g of weight for more than 30 seconds.

Spreadability

The herbal deodorant stick's spreadability was determined by placing 0.5g of the deodorant stick on a dry and clean glass slide. The sample was spread outward in a circular motion using a cover slip with moderate pressure and then it is observed.

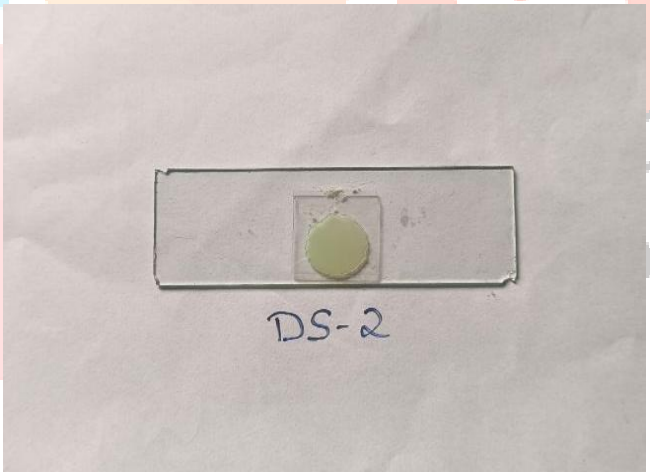


Fig.no 6: Spreadability

Spreadability test for herbal deodorant stick was performed. The formulated herbal deodorant stick was found to have an excellent spreadability.

Stability test

Sweating is the result of too much oil or solvent getting on the deodorant sticks' surface. If the sample is unstable, sweat will be visible. For two weeks, the stability test was conducted by placing deodorant sticks at different temperature like 3-5°C Refrigirator, 37°C Room temperature and 40-45°C Hot-Air Oven To observe the Colour change, Sweating and Melting deformation by samples.

Table no. 3: Stability studies

TEMPERATURE	EVALUATION PARAMETES	OBSERVATIONS		
		DS1	**DS2**	**DS3**
3-5°C Refrigirator	Colour Change	Light Green	Green	Green
	Sweating	No	No	No
	Melting Deformation	No	No	No
37°C Room temperature	Colour Change	Light Green	Green	Cream
	Sweating	No	No	No
	Melting Deformation	No	No	No
40-45°C Hot-Air Oven	Colour Change	Light Green	Green	Cream
	Sweating	No	No	No
	Melting Deformation	Soft	Soft	Soft

Stability studies were conducted on three formulations at various temperatures. The Results Were Tabulated in table no 1.3 and found that herbal deodorant stick 3 as undergone colour change and lost its effectiveness.

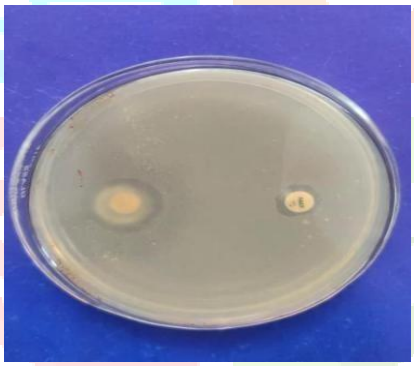
Antibacterial activity of formulated Herbal Deodorant Stick

Using Sabouraud's dextrose agar [Hi-media], the antibacterial activity has been evaluated using the agar-well diffusion standard cup plate method. The microbe suspension was added to the melted medium, which was then left to solidify. Using sterile forceps, the formulations were aseptically moved to the Hi-media in a Petri dish. The herbal deodorant stick that was created has been preserved for five to seven days of incubation at 30°C in an incubator. The measurement of the zone of inhibition's diameter in millimeters served as the basis for evaluating the antibacterial activity.

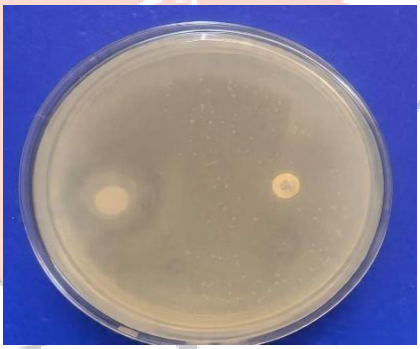
Table no 4: Antibacterial activity of herbal deodorant stick

SI No	Formulation code	Zone of inhibition (mm)	
		Microorganisms	
		S. aureus	E. coli
1	DS1	14mm	12mm
2	DS2	18mm	16mm
3	DS3	17mm	15mm

Antibacterial Test was conducted to herbal deodorant sticks using two different Microorganisms and the results are tabulated in table 4



S.aureus



E.coli

CONCLUSION

The formulated herbal deodorant stick using Chamomile oil, Sunflower wax, Olive oil, Castor oil, Champaka oil as demonstrated effective stability, spreadability, and ease of application, making it a suitable, altrenative to conventional deodorants. Accordingly, three formulations, DS1, DS2 and DS3, were posse physical and Antibacterial tests. Of these, the best performing The DS2 division boasted the most effective antimicrobial action and good stability and sensory traits. This was due to DS2's composition of sunflower wax, olive oil, castor oil, chamomile oil and champak oil with good odour and skin property. Also, the formulation revealed 95% inhibition of bacterial growth indicating its ability to function as a natural deodorant. Participants were 90% satisfied that odour was protected and 85% satisfied with skin feel after sensory evaluation. In conclusion, DS2 is more prevailing even more alternative than traditional deodorants in way of incorporating natural components with therapeutic properties. The present investigation highlights the use of herbal deodorant sticks for personal care and further studies for their development are required.

REFERENCES

1. S K Chaudhri, N K Jain. History of Cosmetics: ancient times, modern. Dr. H. S. Gour Vishwavidyalaya, Sagar - 470 003, Madhya Pradesh, India. Asian Journal of Pharmaceutics - July September 2009.

2. Hardik B. Bhatt, Dr. Nikunj B. Patel. Natural Deodorants: A way towards sustainable cosmetics. Sankalchand Patel University, Visnagar. International Journal of Pharmaceutical Science and Health Care. RS Publication. May.-June.2021.

3. Paweenuch Teerasumran, Eirini Velliou, Shuo Bai, Qiong Cai. Deodorants and antiperspirants: New trends in their active agents and testing methods. Volume 3. University of Surrey, Guildford. International Journal of Cosmetic Science. 21 March 2023.

4. Laila Susanti, Subur Widodo, Qurrota Aini, Dyah Rahmawati. Antibacterial Activity From Cucumber (Cucumis sativus .L) Ethanol Extract In Deodorant Roll On Dosage Form. University Of Tulang Bawang Lampung. International Journal of Pharmaceutical Science. April 2017.

5. Suvarna Ashok Pakhare1, Sakshi Omprakash Jaju, Anand Daulatrao Khendke. Cocoa butter, corn strach and sodium Bicarbonate Infused Roll-on deodorant: A novel approach to Odour control. Volume: 9. Dr.Babsaheb Ambedkar Technological University, Raigad, Lonere. EPRA International Journal of Research and Development. May 2024.

6. Fatemeh Poudineh1, Ania Ahani Azari1, Leila Fozouni. Antibacterial Activity of Ethanolic Extract of Matricaria chamomilla, Malva cylvestris, and Capsella bursa-pastoris against Multidrug Resistant Pseudomonas aeruginosa Strains. Islamic Azad University, Iran. Hamadan University of Medical Sciences. Avicenna Journal of Clinical Microbiology and Infection 30 Mar. 2021.

7. Pradeepa Panneerselvam, Vedha Hari B Narayanan*, Ramya Devi Durai. Pharmacological and Medicinal Potential from Flowers of Perfume Tree M. champaca. Volume 8. Sastra University, Thanjavur, Tamil Nadu, India. International Journal of Pharmacognosy and Phytochemical Research. 15th November, 2016.

8. Maja Molnar, Nikolina Mendešević, Drago Šubarić, Ines Banjari and Stela Jokić. Comparison of various techniques for the extraction of umbelliferone and herniarin in Matricaria chamomilla processing fractions. Chemistry Central Journal. 2017.

9. Hilda Maysarah, Irma Sari1, Meutia Faradilla and Edrina Elfia Rosa. Stick Perfume Formulation from Jeumpa Flowers (Magnolia champaca (L) Baill Ex. Pierre). Universitas Syiah Kuala, Banda Aceh, Indonesia. Research gate Science and Technology Publications. January 2019.

10. Chandrashekhar B. Badwaik, Updesh B. Lade, Tikesh Agarwal, Prachi Barsagade, Madhuri Nandgave, Nilam Gaddamwar. Formulation and Evaluation of Herbal Face Cream. Volume 7. Gondia Maharastra441601, India. International Journal of Pharmaceutical Research and Applications. February 2022.

11. Ghongade Govind, Madhavi. Review of herbal Drug formulations and its Evaluations. Volume 8. Mintage Journal of Pharmaceutical & Medical Sciences. Dr. Bhanuben Nanavati College of Pharmacy. Mintage journal of Pharmaceutical & Medical Sciences. Jan- Mar 2019.