ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

Review Article

([ISSN: xxxx-xxxx] Journal Homepage:https://anusearch-ijpas.com/)

Aloe Vera as hand sanitizer

Mathe Akshita, Solanki Ankita, Bharad Ankita , Chandane Arati, Deshmukh Akanksha, Kale R.H.

ARTICLE INFO

Received On: 20-11-25

Modified On: 24-03-26

Published On: 17-09-26

DOI: https://doi.org/10.5281/zenodo.20604582

ABSTRACT

Aloe Vera is a succulent plant know for its think, gel like *Aloe Vera* is often mix with alcohol in homemade or commercial hand sanitizer to counteract the drying effect of alcohol *aloe vera* is provide moisturizing and smoothness to give the skin combining *Aloe Vera* maintaining hygiene while reduce the dryness from skin the alcohol *Aloe Vera* is plant that originally come from north Africa this gel is mostly water but also has vitamin people have been using *Aloe Vera* for a long time to so the burn heal small cut and irritated skin even today its still used in many skincare and health product because its gentle, natural, and skin the medical and cosmetic benefits of *Aloe Vera* have long been recognized .this review highlights the antimicrobial and moisturizing qualities of *Aloe Vera* while examining its potential as a hand sanitizer *A loe Vera* gel is a promising substitute for

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

artificial hand sanitizer because it has been demonstrated to stop the growth of a variety of microorganisms such as bacteria, viruses, and fungi.

KEYWORDS

Aloe Vera-based sanitizing gel, Herbal antimicrobial hand hygiene, Phytochemical-driven disinfectant, Alcohol-aloe synergistic sanitizer, Skin-friendly natural sanitizer, Aloe Vera gel antimicrobial efficacy.

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

INTRODUCTION

In the *Aloe Vera* hand sanitizer give moister to skin also comfortable to all type of skin and it is not harmful for anyone the cosmetic are product also use for the *alovera* and cosmetic agent that usable cleanse,enhance,or protect the apperance of the human body they're applied extremally (skin,hair,nails,etc) also personal hygiene;hand sanitizer safety-regulated;tested for any type of skin compatibility e.g.BIS,FDA regulation. This sanitizer we use the perfumes agent and also use the ethanol for use as the sanitizer for kill the any microorganism[1] .The sanitizer use as the give the temporay effect; no long term physiological change the word 'cosmetic' come from the greek kosmetikos meaning for that 'skilled in adornment[2].

Benefits of Adding Moisturizing to Hand

1) **Protect dryness and cracking from the skin**: Alcohol in sanitizer strips natural oil,

2) **Soothes irritation**: *Aloe Vera* , chamomile , or vitamin E clam the redness, Ideal for frequent use (healthcare).

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

3) **Maintains Skin Barrier:** Glycerin locks in hydration, protecting against germ, Ceramide repair the skin outer layer, improve long term skin heal, Maintain the *Aloe Vera* hand sanitizer for 30 days at 40°C and at room temperature (25°C).

Disadvantage of Sanitizer

Ø **Not effective as soap and water**

i) Can’t remove dirt ,grease or chemical

ii) Less effective on norovirus ,c difficult

iii) Require proper use (enough product, rub till dry)

Ø **Skin irritation**

i) Alcohol dries out skin-cracking, redness

ii) Fragrance/allergens may cause reaction

iii) Incomplete Germ Removal

iv) Does not kill all type (e.g. norovirus, parasite)

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

Ø **Fire risk**

i) Alcohol based sanitizer

ii) Avoid nest from the heat or open flame

Ø **Swallowing risk**

i) Toxic if ingested

Advantages of Sanitizer

1. Kills germs fast

2. Convenient and portable

3. Quick drying

4. Suite to all type of the skin

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

5. Less skin irritation

6. Protect the illness

.

The hand sanitizer is decrerase level of the microrganisms by the killing the cemically its like the work as the disinfectant killing the germ enviromental surface Washing hand without soap is much less effecveness from the hand sanitizer is best when a law volume product is applied to the hand the reality is that most people just wont tolerant wet hand for more than about 30 second.

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

MATERIALS AND METHODS

Ø Preparation of evaluation methods:-

1. Aloe Vera Hand Sanitizer Preparation:

Combine 5% glycerine, 20% ethanol, and 70% aloe vera gel.

To the mixture, add 5% distilled water.

Filter through a 0.2 µm filter after giving it a good stir.

2. Antimicrobial Activity Assessment:

Assess the aloe vera hand sanitizer's antimicrobial efficacy against E. coli using the agar diffusion method. Coli, S. aureus as well as C. albicans.

Examine the zone of inhibition in comparison to distilled water (negative control) and commercial hand sanitizer (positive control).

3. Assessment of Skin Hydrating Capabilities:

Measure the moisture content of human skin samples using a skin moisture meter both before and after using aloe vera hand sanitizer.

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

Examine the outcomes in comparison to distilled water (negative control) and commercial hand sanitizer (positive control).

4. Viscosity and pH Measurement:

Use a pH meter to determine the aloe vera hand sanitizer's pH.

Using a viscometer, determine the aloe vera hand sanitizer's viscosity.

5. Test for Skin Irritation:

After 24 hours, apply the aloe vera hand sanitizer to human skin samples and look for any indications of irritation, such as redness, itching, etc.

6. Analysis of Stability:

Maintain the Aloe Vera hand sanitizer for 30 days at 40°C and at room temperature (25°C).

Assess the hand sanitizer's pH, viscosity, and antimicrobial activity after 0, 15, and 30 days[10]

Fresh *Aloe Vera* leaves were obtained from healthy, mature plants. Basic laboratory materials such as gloves, clean containers, measuring tools, and mixing utensils were prepared to maintain hygiene during the process the

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

collected leaves were washed thoroughly to remove dust and contaminants. The outer green rind was carefully removed, and the transparent inner gel was scooped out using sterilized instruments. The extracted gel was transferred to a clean beaker for further processing .The Aloe Vera gel was blended until smooth to ensure even consistency. A suitable sanitizing agent (commonly an alcohol base provided by the school/lab) was added in an appropriate and safe proportion as directed by the experiment guidelines. The mixture was gently stirred until uniform. Optional natural additives such as essential oils were included only for fragrance and not for disinfecting purpose .The mixture was filtered using a clean muslin cloth or fine sieve to remove any remaining fibers The final solution was poured into sterile dispensing bottles and properly labelled . A simple comparative test was conducted by applying the Aloe-based sanitizer and a commercial sanitizer on separate samples (e.g., swabbed surfaces or culture plates provided by the laboratory). The samples were examined for reduction in visible microbial growth after the set observation period. All tests were carried out under the supervision of a teacher or lab technician. Observations on texture, ease of application, skin feel, and microbial reduction were recorded. The performance of the Aloe Vera hand sanitizer was compared with standard products, and the results were analysed to determine its overall effectiveness.

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

RESULTS

The WHO is the clear an alcohol-based hand rub as an alcohol rub containing preparation using the ingredient as a (liquid, gel of foam) this the particular preparation may be contain more type of alcohol and also use other active ingredient with specific excipient and humectants'And the alcohol based hand sanitizer or particular antiseptic morely using or contain isopropanol,ethanol,n-propanol after that the mix with the active ingredients the antimicrobial activities of the alcohol is the characteristic to there capacity to denaturation and coagulant the protein this cause microbes to the lose their prevented coating and become non-functional the center for disease control and protected suggest formulation containing 80% (percent volume) ethanol 50%. In one study , a hospital –wide hand disinfection resulted in sustained enhance in hand –hygiene compline, coinciding with decreasing nosocomial infection and MRSA transmission A proper review also demonstrated with maximum certainly that the In 1966, hand sanitizers were initially used in medical environments such as hospitals and clinics.

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

DISCUSSION

Hand sanitizer also called hand antiseptic ,hand disinfetant or hand rub is liquid ,gel, or foam that pepole use to kills germ like virues and bacteria on their hand its also come in oher from such as a cream,spray or wipe Usually its better to wash hand with soap and water but hand sanitizer is usefully when soap and water are’nt available for example when you’re outside or travellihg However , sanitizer don’t work well on some germ like norovirus difficile and they can’t remove dirt or harmfully chemical from the your hand If the you wipe(3) 9 the off the sanitizer before its dries, its won’t work properly.also sanitizer with too little alcohol don’t kill germ effective Using sanitizer too often can also dry out your skin ,hurt the sakin natural protective and also somtime cause rashes or irritation (called dermatitis Maintaining the hand hygiene has been established as the grand for the decreasing the colonization and angle of the incidence of the particular infection diseases in the population The approval with hand hygience the advice is believed to play important role in reducing the risk of the gastroenteric and respiratory infection Strict hand hygiene is the so much significant for the heathcare workers (HCW) The hand sanitizers may be powered by the number of different active ingredient , but have you ever notice that most hand sanitizer use alcohol as the active ingredient particular contact time limit for the laboratory belive that the particular.

Ethanol (Ethyl alcohol)

- €Chemical Formula: C_2H_5OH

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

- €Type: Colorless, flammable alcohol.

- €Production: Made by fermenting sugars (grains, fruits) or synthetic processes.

- €sanitizers, cleaning, lab work).

- €Uses: Disinfectant, solvent, fuel, beverages (hand)

Ø **Uses in Hand Sanitizers**

- Kills germs: Disrupts bacterial/viral membranes.

- Effective against: Bacteria, viruses (including some enveloped viruses like COVID-19), fungi[7].

Ø **Ethanol Use in Hand Sanitizers**

Hand sanitizers can be found in almost any public venue, including offices, gyms, clinics, and shops. These disinfectant hand rubs provide numerous benefits to handwashing. Hand sanitizers do not require running water and may be applied considerably more swiftly and conveniently, increasing compliance. At the height of the epidemic, there was a boom in research interest in hand sanitizers, as preventing germ spread became critically important. The rising demand caused a supply constraint, prompting researchers[10]

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

v Jasmine Oil

- •€Botanical Name: Jasminum officinale/sambac
- •€Extraction: Steam distillation or enfleurage (delicate flowers).
- •€Scent: Rich, sweet, floral, exotic.
- •€Color: Pale yellow to amber.

l Uses of Jasmine Oil

1. Aromatherapy:
   - Relieves stress, anxiety, depression.
   - Aphrodisiac: Promotes romance, intimacy.
2. Skincare:
   - Hydrates, soothes irritation.

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

- Anti-aging: Antioxidants fight wrinkless

Dilute (1–2 drops) in carrier oil (coconut, jojoba).

3. Haircare - Strengthens roots, adds shine, Scalp massage

4. Massage:- Eases muscle pain, tension.

5. Perfumery:- High-end fragrances

Cultural/Traditional:- Indian rituals, weddings, [11]

l **USE**

The jasmine oil are use in sanitizer for give the better fragrance

So that why the odor are presence to there particular sanitizer

v Lavender Oil

Lavender Oil which comes from the steam distillation of Lavandula

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

angustifolia flowers, has a light yellow to clear colour and a relaxing, flowery, with herbaceous aroma. This adaptable essential oil has several advantages and is mainly from the Mediterranean regions, including France, Spain, and Himachal Pradesh in India. It helps reduce stress and anxiety by inhalation or baths, and it enhances the quality of sleep when diffused or applied to pillows. Because of its antibacterial and anti-inflammatory qualities, lavender oil also aids in skincare by treating burns and acne. It also functions as a natural insect repellent, promotes hair development, relieves headaches and muscle soreness, and improves mood through aromatherapy.

USE

1. Aromatherapy: Lavender essential oil is used to ease tension, encourage relaxation, and enhance the quality of sleep.
2. Skincare: Lavender works well to treat wounds, dermatitis, and acne because of its antibacterial and anti-inflammatory qualities.
3. Haircare: Lavender oil helps ease scalp irritations, encourage hair growth, and lessen vertigo.
4. Pain Relief: Headaches , tight muscles, and joint pain can all be relieved with lavender oil.
5. Insect Repellent: may use lavender as a natural insect repellent to keep pests like You mosquitoes away.

vAloe Vera

The Miracle Plant of Nature

Aloe barbadensis miller is the

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

botanical name

It belongs to the Asphodelaceae (Liliaceae) family, it originated in the Arabian Peninsula, Africa, and India. The plant is succulent and has thick, meaty leaves.

Important Ingredients: 99% water, minerals (Ca, Mg, Zn), and vitamins (A, C, and E)

USE

- €Topical applications
- €include lotions, gels, and creams.
- €Supplements and juices-Shampoos and masks for
- €Hair-Home remedies include hair treatments and face masks.

Carbocol Powder

A Versatile Cosmetic and Pharmaceutical Ingredient

Applications:

1. **Cosmetics**: A variety of cosmetic goods, such as creams, lotions, gels,

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

and hand sanitizers, include carbocol powder.

2. Pharmaceuticals: Tablets, capsules, and topical lotions are among the medicinal medicines that contain it.

3. Personal care items: Toothpaste, shampoo, and conditioner are among the items that include carbocol powder.

l **Benefits**

1. **Better texture**: A product's texture can be enhanced with carbocol powder, making it more user-friendly.

2. Enhanced stability: It can help prolong a product's shelf life by making it more stable.

3. Enhanced efficacy: A product's ability to deliver active ingredients can be improved by using carbocol powder.[9]

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

CONCLUSION

Aloe Vera has antimicrobial, moisturizing and anti-inflammatory properties making it a promising addition to hand sanitizers. To completely investigate its possible uses and guarantee its efficacy and safety in hand sanitizers. Aloe Vera–based hand sanitizer offers a safe, effective, and skin-friendly alternative to many commercial formulations. Its natural antimicrobial properties help reduce harmful microorganisms, while its soothing gel prevents dryness and irritation commonly caused by alcohol-based sanitizers. The combination of Aloe Vera gel with appropriate disinfecting agents provides both protection and comfort, making it suitable for regular use. Overall, Aloe Vera hand sanitizer is a practical, affordable, and gentle solution for maintaining hand hygiene, especially in situations where frequent sanitation is necessary.

ABBREVIATIONS

(A.Vera) or (AV) aloe vera

FUNDING

self funded

CONFLICT OF INTERESTS

Author does not show any conflict

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

REFERENCES

1. Akash N, Rani L, Soma Sundaram J, Role of hand sanitizers in infection control practices. Annals of the Romanian Society for Cell Biology.2021:25(3);815-25.

2. Iqbal, T., Hamza, A. and Altaf, S., 2023. Preparation of hand sanitizer at home through plant extracts. Biol. Times, 2, pp.5-6

3. Chakraborty, A., Mukhopadhyay, A., Sur, A. and Ghosh, S., 2021, February. Production of cheap hand sanitizer with herbal ingredients. In Journal of Physics: Conference Series (Vol. 1797, No. 1, p. 012036). IOP Publishing.

4. .Bhadane, S., Takarkhede, S., Kakade, P., Jaiswal, S., Kanaujiya, S. and Khan, A., 2022. Formulation and evaluation of herbal hand sanitizer. World Journal of Pharmaceutical Research, 11(4), pp.695-705.

5. Iqbal, T., Hamza, A. and Altaf, S., 2023. Preparation of hand sanitizer at home through plant extracts. Biol. Times, 2, pp.5-6.

6. Alam, M.R., Goswami, S., Ali, A., Ansari, M.M., Pathak, S. and Salma, S., 2023. FORMULATIONS AND EVALUATIONS OF HAND SANITIZER PREPARED FROM GUAVA AND ALOE VERA LEAVES.

7. Yunanda, L.D., Masfiyah, M. and Rahayu, R., 2025. Effectiveness Comparison of Aloe vera and 70% Alcohol Hand Sanitizers in Reducing Hand

ANU-SEARCH THE INTERNATIONAL JOURNAL OF PHARMA AND ALLIED SCIENCES

Microorganism Colonies. Media Farmasi Indonesia, 20(2), pp.153-164.

8. Sridhar, S., Screening and Formulation of Hand Sanitizer with Herbal Extracts of Aloe Vera and Cinnamon.

9. Sirait, S.M., Rahmatia, L. and Enriyani, R., 2022. Effect of alkalizing agent variation for Aloe vera gel handsanitizer formulation. Research Journal of Pharmacy and Technology, 15(9), pp.4037-4042..

10. Alam, M.,,R, Goswami , S, Ali, A., Ansari,M.M., Pathak,S. and Salma, S., 2023.FORMULATION AND EVALUATION OF HAND SANITIZER PREPARED FROM GUAVA AND ALOE VERA LEAVES

11. Iqbal. T.,Hamza, A. and Altaf, S., 2023.preparation of hand sanitizer at home through plant extracts.Biol. Times,2,pp5-6.

HOW TO CITE: Mathe Akshita, Solanki Ankita, Bharad Ankita , Chandane Arati, Deshmukh Akanksha, Kale R.H., *Aloe Vera as hand sanitizer*, Anusearch IJPAS, 2026, I(I), Page, Review Article, DOI: https://doi.org/10.5281/zenodo.20604582