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Antimicrobial Activity of Tagetes (Marigold Flower) Hydroextract Infused Wet Wipes

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Abstract: ***Medicinal flower marigold (tagetes) is been used and harvested for its medical properties both internally and externally. Which has beneficial impact such as lowers Inflammation and free radical damage, reduces eye Inflammation and conjunctivitis, has natural antiseptic properties, heals Skin wounds, burns and rashes, helps reduce hemorrhoid pain, eases cramps and spasms, naturally repels bugs and has antimicrobial properties. The aim of hydroextract of marigold flower(tagetes) infused in non woven cloth made to reduce diaper rashes and protect sensitive skin, decrease the appearance of discoloration due to scarring, treat fungal infection in skin, which also helps in preventing the skin infections. The hydroextract of tagetes is incorporated with fragrance such as lavender oil which also supports the clearance of infections. To increase the moisture content of the wipe coconut oil is also infused. The infused materials in non woven cloth is meant to be wet wipes which contains antimicrobial properties with fragrance of lavender and good moisture level in it. The developed product is objectively evaluated (antimicrobial activity) and that was found to be good.***

Keywords: ***Medicinal flower, Tagetes (marigold flower), Hydroextract, Antimicrobial activity.***

I. INTRODUCTION

Wet wipes contain antimicrobial properties can be used to cleanse, moisturise and deodorise, and barrier protection. It can be used on every part of your body and specifically the outer exposed parts. Wet wipes are meant for its balanced pH level. Hydroextracted marigold flower wet wipes prevent bacterial and fungal infection leaves the skin soft and clean also improves skin health. These wipes are hygienic, after the first the use they are easy disposable and degradable in nature [1]. Non woven fibers plays the key role in this wipes. It is a fabric like material made from short and long fibres, bonded together by chemical, mechanical, heat or solvent treatment. Non-woven materials are used in numerous applications in medical field such as isolation gowns, surgical gowns, masks, wound dressing, drug delivery, plasters, etc [2] [3]. The parameters for the fabric functionality should be of good feel and appearances compatibility with the active elements, Skin exfoliation or surface cleaning, wettability, absorbency capability and release or transfer of formulation[4]. Non woven fabric have been selected by the interest and indused with the antimicrobial rich mixture made up of medicinal plants. In this paper the attempt have been taken to formulate a natural mixture infused in the non woven fabric with the beneficial properties such as antibacterial and antifungal introduced in the fabric , made as wet wipes with essential fragrance and moisture content in it. The wipe is infused with marigold flower extract (tagetes) which is filled with medicinal properties such as antibacterial and antifungal.

II. MATERIALS AND METHODS

A. Collection of Herbal Plants

The herbal plants such as marigold flower (tagetes), lavender oil for fragrance and coconut oil for moisture have been collected from the area around Coimbatore district, Tamilnadu, India.

Marigold flower (tagetes)

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B. Marigold Flower Extract Process

Flower have been collected, washed and dried completely. 5g of tagetes have been taken and boiled with distilled water, marigold flower extract have been collected.

C. Lavender Oil

Lavender oil is an essential oil derived from the lavender plant. It can be taken orally, applied to the skin, and breathed in through aromatherapy. Lavender oil can benefit the skin in numerous ways. It has the ability to lessen acne, help lighten skin, and reduce wrinkles. It can even be used to treat other things, like improving hair health and digestion [5].

Lavender oil

D. Coconut Oil

Coconut oil contains nourishing fatty acids that help hydrate and protect skin. These include linoleic acid (vitamin F), which helps skin retain moisture, and lauric acid, which has antibacterial properties [6]. If skin is dry, flaky skin, using coconut oil instead of your regular moisturizer may soften and hydrate your skin, leaving it looking refreshed and soft upon waking [7].

Coconut oil

E. Preparation of Concentrated Hydro Extract of Tagetes Erecta (Marigold Flower)

1) *Tagetes erecta* (marigold flower) were purchased from the local market, thoroughly washed with distilled water more then three times collected the wetted flower and shade dried for two weeks, powdered and sieved at 2mm sieving jar and stored in a air tight container for further use.
2) 5g of *Tagetes erecta* (marigold flower) powder was weighed, mixed with 40ml of distilled water and boiled untill the flower colour gets into the distilled water (orange colour).
3) The volume was reduced to 20ml after boiling for long time at room temperature.
4) The mixture was cooled and filtered. The cooled filterated mixture was added with 1ml of coconut oil and 1ml lavender oil in the ratio of 20:1:1.

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F. Selection of Wipe Material

Usually the wipe materials are non-woven fabric. Non woven fabrics are broadly defined as sheet or web structures bounded together by entangled fiber or filaments. Non-woven are known for their exceptional absorbency, cleanliness, and overall cleaning performance [8], Because of its soft and absorbing properties non woven cloth have selected for wet wipes.

Non woven fabric

G. Preparation of Wet Wipes

The non woven cloth have been arranged in a container and wetted with the functional liquid (marigold flower) : coconut oillavender oil and made the non woven cloth to observe as per the protocol [9] .

Hydroextract infused wet wipes

Procedure for performing antibacterial activity

1) Microorganisms *Staphylococus aureus* , *Streptococus aureus have* been collected from department of Microbiology, Dr.N.G.P Arts And Science College.
2) Culture plates were prepared using Mueller hinton agar and the selected bacteria and fungal strains have been spread over the plates.
3) Wet wipes have been cut into small pieces and keep inside the petri dish and kept in the incubator for 24h at 37°C . L.
4) The zone have been formed after the incubation period after 24 hours.The zone of inhibition was measured.

Procedure for performing antifungal activity

a) *Cryptococous neoformans*, *Tricophyts interdigitale* have been collected from department of Microbiology, Dr.N.G.P Arts And Science College.
b) Culture plates were prepared using Mueller hinton agar and the selected bacteria and fungal strains have been spread over the plates.
c) Wet wipes have been cut into small pieces and keep inside the petri dish and kept in the incubator for 24h at 37°C.
d) The zone of inhibition was measured. The antifungal activity of wet wipes is analyzed to determine the susceptibility of wet wipes to mildew, rot and to evaluate the efficacy against fungal growth. The zone of inhibition was measured .

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III. RESULTS AND DISCUSSIN

A. Determination of Antimicrobial Activity

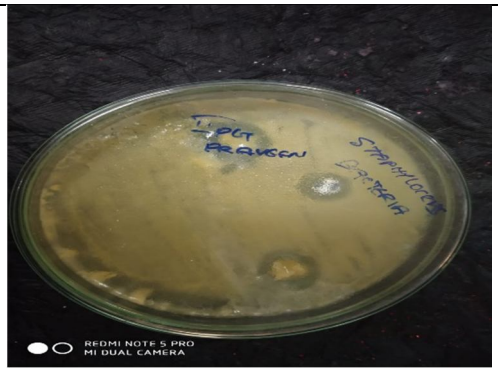
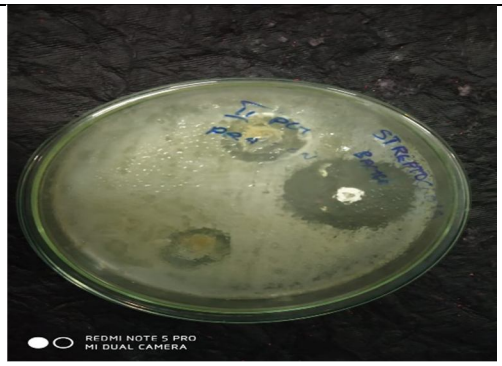
1) The antibacterial and antifungal activity of the selected antimicrobial strains were presented in table I.

2) The antibacterial and antifungal activity of the wet wipes were observed against the selected microorganisms(Bacterial strains-*streptococcus aureus and straptococus aureus*, Fungal strains-*Cryptococcus neoformans and Tricophyst interdigitale*) which was evident from the zone of inhibition observed around the wet wipes. The results were comparable with that of the standard antibiotic disc streptomy

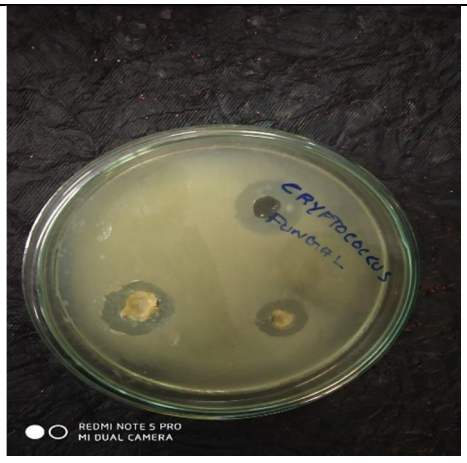
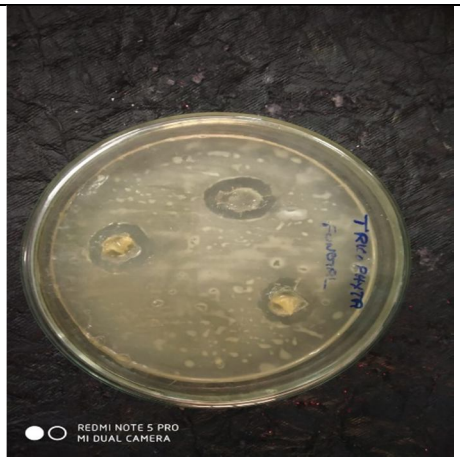
3) The antibacterial and antifungal activity of wipes may be attributed to the active compounds present in the *Tagetes erecta extract,* coconut oil and lavender oil.

IV. OBSERVATION

A. Antibacterial Activity By Agar Plate

	
Straphylococcus aureus	*Streptococcus aureus*

B. Antifungal Activity By Agar Plate

	
Cryptococcus neoformans	*Tricophyst interdigitale*

V. TABLE

Test	Zone of inhibition in c.m			
Bacterial strains	Standard Streptomycin disk	Wet wipes C1	C2 C3	Standard deviation
Straphylococcus aureus	0.6	0.8	1 1.2	0.2
Streptococcus aureus	1.8	1.2	1.1 1	0.1
Fungal strains				
Cryptococcus neoformans	1.0	1.0	1.4 0.8	0.30
Tricophyst interdigitale	1.0	1.1	1 1.2	0.1

VI. CONCLUSION

Herbal finished wet wipes that control bacterial growth will be helpful in enhancing skin health and controlling bacteria associated skin diseases. The fragrance taken from the lavender oil is added credit for this product.

VII. ACKNOWLEDGEMENTS

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Author's contributions

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Conflict of interest: None

REFERENCES

[1] 1Ward DB, Fleischer AB, Feldman SR, Krowchuk DP. Characterization of diaper dermatitis in the United States. Arch Pediatr Adolesc Med. 2000;154:943. Crossref CAS PubMed Web of Science®Google Scholar

[2] Müller, W. W.; Saathoff, F. (2015). "Geosynthetics in geoenvironmental engineering". Science and Technology of Advanced Materials. 16 (3): 034605. Bibcode:2015STAdM..16c4605M. doi:10.1088/1468-6996/16/3/034605. PMC 5099829. PMID 27877792.

[3] Balogh, A., Farkas, B., Faragó, K., Farkas, A., Wagner, I., Van Assche, I., ... & Marosi, G. (2015). "Melt-blown and electrospun drug-loaded polymer fiber mats for dissolution enhancement: A comparative study" (PDF). Journal of Pharmaceutical Sciences. 104 (5): 1767–1776. doi:10.1002/jps.24399. PMID 25761776

[4] Almroth et al., 2018 B.M. Almroth, L. Astrom, S. Roslund, H. Peterson, M. Johansson, N.K. Persson Quantifying shedding of synthetic fibres from textiles; a source of microplastics released into the environment Environ. Sci. Pollut. Control Ser., 25 (2) (2018), pp. 1191-1199, 10.1007/s11356-017-0528-7 Google Scholar

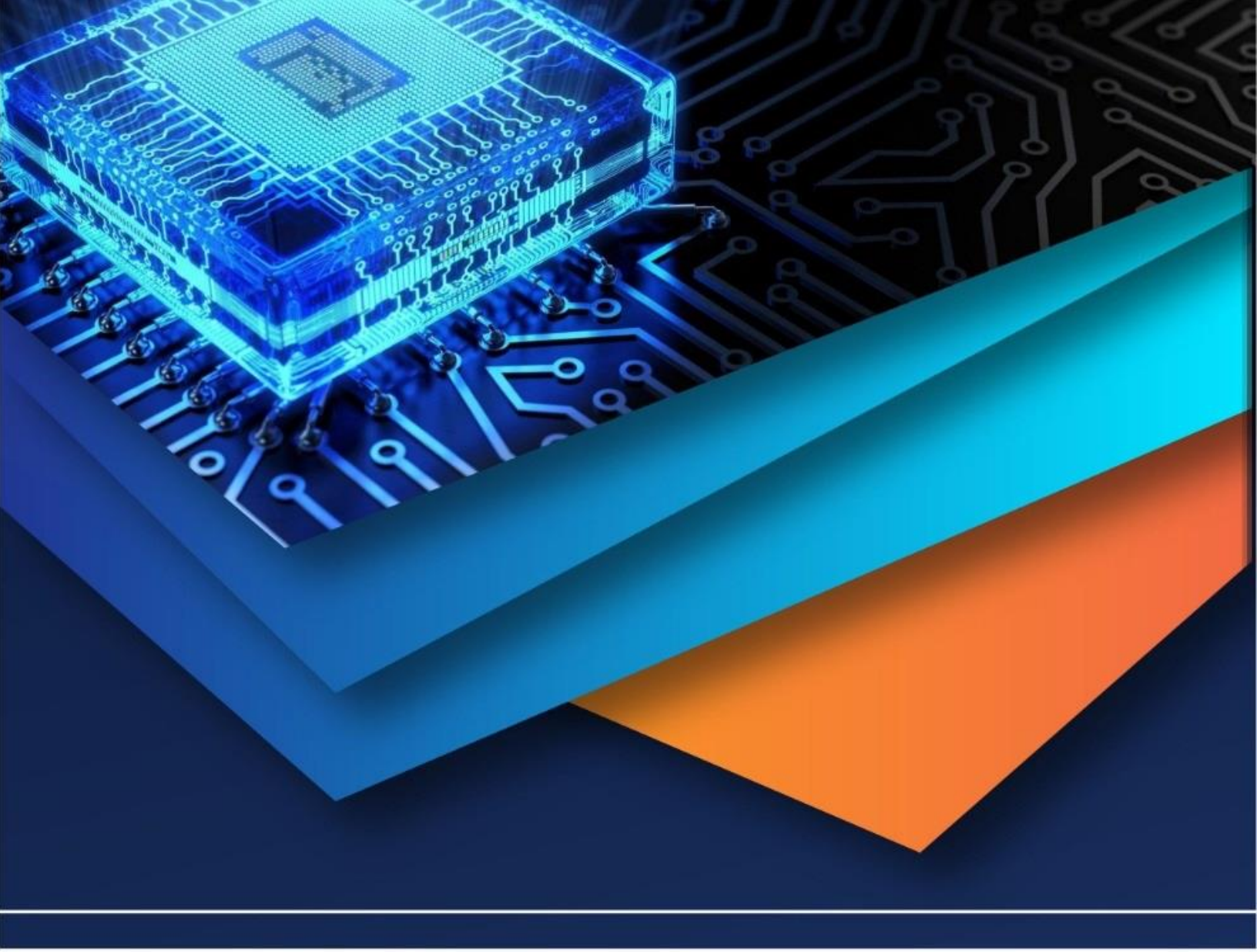
[5] Medically reviewed by Debra Sullivan, Ph.D., MSN, R.N., CNE, COI — Written by Ana Gotter on December 17, 2018

[6] Written by Jillian Kubala, MS, RD on November 25, 2019 — Medically reviewed by Katherine Marengo LDN, R.D.

[7] Medically reviewed by Debra Sullivan, Ph.D., MSN, R.N., CNE, COI — Written by Corey Whelan — Updated on March 16, 2020

[8] *Xinjiang* Zhang, Chao *Peng*, Yuxiao Wang, Chen Huang, Yi Zhao, Xiangyu Jin First Published February 2, 2018

[9] Tagetes erecta (marigold flower) Syrie Chamba and George Mendel , 2004; Adler Charan and Shabtai ,2018.



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