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Mixture of olive oil and *Aloe vera* gel: A natural mosquito repellent and a skin moisturizer

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Abstract

Aloe vera is also called a succulent plant belonging to Order Asparagales, family sphodelaceae and genus *Aloe* and found in arid areas and conserves water. *Aloe vera* leaves are fleshy having gel like substance inside. Olive oil is also being used since ancient times for skin care and smoothening agent for skin. Human skin is prone to be invaded by mosquitos and other vectors that can transmit so many diseases like Dengue, Malaria, Zika virus, *Arbovirus* and others. Fresh *Aloe vera* plant was collected from its natural habitat i.e. Hangu road grave yard in district Kohat, Pakistan. Leaves were properly cut i.e. their hard epidermis was peeled off by sharp knife and the inner gel was scooped out by a spoon. Gel was kept in a glass jar for further experimental analysis. Refined olive oil was purchased from local market of district Kohat. Olive oil was mixed with the *Aloe vera* gel and sample was prepared in different concentrations. The mixture was applied to the skin by volunteers overnight. It was revealed in this study that *Aloe vera* gel and Olive oil have a mosquito repellent property when mixed. Mixture can be prepared with different concentration as per skin sensitivity keeping in mint the allergic reactions of the *Aloe vera* gel. As one's skin can be allergic to the *Aloe vera*. Moreover, Olive oil has skin smoothening property it can keep skin moisturized.

Keywords: *Aloe vera*, Olive oil, mosquito repellent, skin moisturizer

1. Introduction

Aloe vera is also called a succulent plant belong to Order Asparagales, family sphodelaceae and genus *Aloe* found in arid areas and conserve water [1]. *Aloe vera* leaves are fleshy having gel like substance inside [2]. Geographical distribution of this plant is worldwide [3]. Studies suggested that its gel is being used in cosmetics [4]. It has also moisturizing and wound healing property [5]. *Aloe vera* is now being used as herbal drug for infertilities of skin [6]. Olive oil is also being used from long ago for skin care and smoothening agent for skin [7]. Our skin is prone to be invaded by mosquitos and other vectors, that can transmit so many diseases like Dengue, Malaria, Zika virus, *Arbovirus* and others [8, 9, 10] keeping in views all ground realities of victor borne diseases the current study is designed to explore herbal technique to prevent toe attack of disease causing vector i.e. mosquito.

2. Materials and methods

2.1 Plant Collection / Gel extraction

Fresh *Aloe vera* plant was collected from its natural habitat i.e. Hangu road grave yard in district Kohat, Pakistan. Leaves were properly cut i.e. their hard epidermis was peeled off by sharp knife and the inner gel was scooped out by a spoon. Gel was kept in a glass jar for further experimental analysis.

2.2 Purchase of Oil

Refined olive oil was purchased from local market of district Kohat.

2.3 Sample Preparation

Olive oil was mixed with the *Aloe vera* gel and Sample was prepared in different concentrations.

3. Results

In first step *Aloe vera* gel was extracted from fresh plants and was blended to make a homogenate. In second step 200 ml Olive oil was taken in each of the three beakers and *Aloe vera* gel was mixed in it as shown in the table. In first beaker only 1

table spoon gel was mixed, in 2nd beaker 2 table spoon gel was mixed while in 3rd beaker 3 table spoons gel was mixed. All the beakers were blended discretely for 10 minute in an electric blender.

S. No.	Olive oil (ml)	Gel (Table spoons)	Blended time (Minute)	Volunteers	Results	
					From male respondents	From female respondents
1	-	-	-	1 female	-	Mosquito attack at night
2	200	1	10	1 male, 1 female	Few mosquito bites, smooth skin	Few mosquito bites, smooth skin
3	200	2	10	1 male, 1 female	No mosquito bites, smooth skin	No mosquito bites, smooth skin
4	200	3	10	1 male, 1 female	No mosquito bites, smooth skin	No mosquito bites, Skin irritation

3.1 Experimentation

Experiment was performed on humans with a prior informed consent as there is no harmful effect of olive oil as well as *Aloe vera* gel on human skin. Both are most commonly used for treating skin infirmities. About 6 volunteers were included in an experiment to massage this mixture oil on the naked area of their body overnight and spend night in backyard of the house to check the incidence of mosquito attack. 1 volunteer spent night without applying the oil as he was considered to be a control group of this experiment. Volunteer who didn't apply anything, reported mosquito bites at night. In 2nd group volunteers reported few mosquito bites at night, more over they reported their skin smoother at morning then earlier. In third group volunteers reported no mosquito bite at night and they felt their skin very smooth and moisturized. There was a bit concern in fourth group, members of fourth group reported no mosquito bite but female reported a bit skin irritation due for few minutes, which later on disappeared. The study was approved by the Departmental Ethics Committee at the Department of Zoology, Kohat University of Science and Technology, Pakistan, according to the Helsinki Convention World Medical Association (WMA).

4. Conclusions

In 2016, S. Zareen conducted study on Larvicidal activity of medicinal plant *Eucalyptus* Leaf extracts against *Anopheles* mosquitoes collected from district Kohat and concluded the results that *Eucalyptus* leaf extracts have a larvicidal activity against larvae of *Anopheles* mosquitoes. No larva was found dead till 7 hour of observation when distilled water was applied into Petri dishes. Larvicidal activity can be enhanced by applying maximum concentration of leaf extracts along with an extended time frame.

The present study revealed that *Aloe vera* gel and Olive oil have a mosquito repellent property when mixed. Mixture can be prepared with different concentration as per skin sensitivity keeping in mind the allergic reactions of the *Aloe vera* gel. As one's skin can be allergic to the *Aloe vera*. Moreover, Olive oil has skin smoothening property it can keep skin moisturized.

5. Recommendations

Keeping in mind the outbreaks Malaria, Dengue and other infections caused by mosquito vector, we invite further studies to be carried out on *Aloe vera* gel and Olive oil regarding their mosquito repellent property so that world can get rid of such deadly diseases.

6. Acknowledgments

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