

Development of Cow Dung using Herbal Ingredients Based Mosquito Repellent

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Abstract: *The study of mine was conducted to know that how cow dung can be developed to make a mosquito repellent. The primary research question that i had before starting this study eas that how mosquito repellents can be made by developing cow dung using Herbal Ingredients which is generally available at our home. Here in this study I have developed mosquito repellent which can be made at home and also at a very low cost. This paper deals with the selection and optimization of ingredients, their characteristics, medicinal properties and comparison with existing coils. Moreover, chemical mosquito repellents contain toxic synthetic pyrethroids and DDT as active ingredients whose exposure to food and water is hazardous to health. Before conducting any research experiments i have read many research articles which have helped me in writing this research proposal, which i have mentioned below in my references and also in the literature review section of this paper.*

Keywords: Herbal ingredients, Cow dung, Maida, Neem, Plant extract, Turmeric powder, Lemon grass oil

1. Introduction

Mosquitoes are the most important and abundant pest in urban, suburban and rural environment. Although, chemical control provides quick mortality, resistance of mosquito against the use of insecticides have been widely reported. Moreover, chemical mosquito repellents contain toxic synthetic pyrethroids and DDT as active ingredients whose exposure to food and water is hazardous to health and causes various diseases like lung's diseases and skin diseases. In present study, an attempt has been made by me to develop an eco-friendly mosquito coil containing cow dung, Neem leaves, Turmeric powder, Maida and Lemon grass oil. This paper deals with selection and optimization of ingredients, their characteristics, medicinal properties and comparison with existing coil. Mosquito borne disease are major human-health problem in all tropical and subtropical countries. People in every part of the world suffer from the deadly diseases like malaria, dengue, etc. The disease transmitted include malaria, ilariasis, yellow fever, Japanese encephalitis and dengue fever *Culex quinquefasciatus*, the potential vector of lymphatic ilariasis, is the most widely distributed tropical disease with around 120 million people infected worldwide and 44 million people having common chronic manifestation (Bernhard et al, 2003). Controls of such serious diseases are becoming increasingly difficult because of high rate of reproduction and development of resistance to insecticides in mosquitoes (Sukumar et al, 1991). So therefore the objective of the study of mine includes:

- 1) To make an eco-friendly Mosquito Repellent.
- 2) To prevent the usage of Synthetic Mosquito repellent by replacing it with repellents made from cow Dung and other Herbal products.
- 3) To reduce the growth of the Mosquitoes by using this Herbal repellent.

2. Literature Review

According to the recent studies conducted by the scientists it showed that the growth of artificial repellents in the past few years is a serious concern in the history of mankind's because artificial repellents contain a very harmful chemical known by the name of "DDT" which causes various diseases when inhaled or being applied on the skin. Also the products

of organic repellents which are being sold on the market is suffering a huge loss because organic compounds are a bit costlier than artificially made mosquito or bug repellent but are not harmful. The research conducted by Kranti Sharmaa, Sharad Mishrab and Ashutosh Dubey is really worth expressing in which they showed that how Herbal Mosquito Repellent is better than commercial Mosquito repellent. In fact much of the study conducted by me in this research proposal were being extracted and being inspired from their experiment. Also I would like to express my earnest gratitude to many of the authors whom I have mentioned in my references for their wonderful research work in this field whom I have got up some idea to do my experiment and finalize my results.

3. Methodology

To tackle with the above problems which I have mentioned in my introduction I have framed up some of the methodologies to make a Herbal Repellent using Cow Dung:

- 1) The study of mine is a Descriptive study and is a laboratory based experiment.
- 2) The research location of mine is the laboratory of our school (i.e., "St.Peter's" school situated in Durgapur).
- 3) The participants of this study includes only me and the selection of the ingredients to make the Mosquito repellent is based on the experience of our ancestors and the other research articles were reviewed before writing this research article.

Choosing of the ingredients:

For doing this project the following ingredients were used:

- a) Dried Neem leaves gives off a very strong smell which causes the mosquito to move away or fly away from the area where it is being burned. So it is being used in making the Herbal repellent.
- b) Turmeric powder has a very well-known effect on the insects often it is used as a insecticide or repellents at our home. So this is also being chosen for making the repellent.
- c) Maida is used as to stick up all the ingredients in a definite shape so it is used as a sticking material in making the repellent.

Volume 10 Issue 4, April 2021

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- d) Cow Dung is the most fundamental ingredient in this repellent as cow dung has phenol, menthol, ammonia, methane, etc which causes a very strong smell coming from it and the mosquitoes usually do not able to withstand this smell and flies off.
- e) Lastly, I used Lemon grass oil to spray around the repellent because Lemon grass oil not only have a very good smell but also causes the mosquito's olfactory glands to block up when they smell it which causes them to die or they fly off.

4. Data Collection / Method of Preparation

The different herbal plants used in the study were collected from our locality. The dried neem leaves (20%), turmeric powder (10%) were mixed with maida (10%) and was ground well to get a powdered form which was then mixed with dried cow dung (50%). After mixing, pressed in to the desired shapes with the help of a mould which was then dried with the help of drier. Lemon grass oil (10%) was sprayed on top of the coil by using a hand spray pump. The coil was dried in the oven at 700c for 6 hr and further kept in the room for half an hour of drying. Finally, these coils were packed in suitable air tight container and kept for 2-3 d for storage so that the essential oil could spread uniformly on the coil.

5. Data Analysis

Experiments were conducted in glass chamber measuring 140x120x60 cm and a window measuring 60x30 cm was situated at mid bottom of one side of the chamber. Three or four day's blood starved adult female mosquitoes, fed with sucrose solution, were released in the chamber. The experiment chamber was tightly closed. Smoke toxicity was tested with commercial mosquito coil and herbal mosquito repellent from 20 min to 1 hr. intervals respectively (Vineetha and Murugan, 2009). It was noticed that by 5 to 7 pm when no coil was used, the room was filled with mosquitoes and at 7 to 8 pm, a commercial coil was used to check the repellence activity in that area. It was found that up to 95 per cent of the mosquitoes were reduced. Further, when no coils were used from 7 to 9 pm again, a large number of mosquitoes were gathered. After the burning of herbal mosquito repellent from 9 to 10 pm, it was noticed that up to 85 per cent of the mosquitoes reduced. According to Palanisami et al (2014) the death of the mosquitoes increased with the application of the herbal mosquito repellent but as the time of using coils increased, 100 per cent of mosquito died with the application of the commercial coil.

6. Conclusion

It is not only that lemon grass oil showed good mosquito repellent activity in performed tests but it was also strong mosquitocidal agent, Hence, lemongrass, essential oil, alone or in combinations with those obtained from other mosquito repellent plant species, could be potentially used for the preparation of mosquito repellent products. The results of this investigation indicated that the lemon grass oil could be beneficial for the control of vector borne diseases. It

provides an herbal repellent with long lasting protection, safe for human life, human and domestic animal skin with no side effect and no feedback of environmental ill effect, as an alternative to synthetic chemical repellents. The formulation was safe, eco-friendly, cheap, easy to use and has maximum repellence against mosquitoes.

7. Plan

The study included the use of Herbal repellents which I got up from our locality and i planned to do this project since after I heard that Scientists had announced a competition regarding the cow science project. The project was completed within 15 days and was conducted in my school "St. Peter's", Durgapur.

8. Budget

As I have collected all the ingredients from my locality and my school also provided me some of the materials that I required. So the total cost is around rupees "500" and in this amount only I have completed the full project including the buying of the material, the conduction of the study, etc.

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