

# Use of Cow Dung as Mosquito Repellent

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**Abstract**— 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 has been widely reported. The present study is to search an alternative based on Cow dung along with some plant extracts, which can be used for preparation of natural mosquito repellents.

**Keywords**— Ayurveda; Cow dung; Herbal insecticides; Mosquito Repellent.

## I. INTRODUCTION

In recent years, in all tropical and subtropical countries mosquito borne diseases have become major human health problem. The diseases transmitted through mosquitoes include malaria, filariasis, yellow fever, Japanese encephalitis and dengue fever. Biological, chemical, environmental and individual protection measures are taken as vector control measures to prevent spread of malaria, dengue fever and other mosquito-borne diseases. Such serious diseases controlling are becoming increasingly difficult because of high rate of reproduction and development of resistance to insecticides in mosquitoes [1].

Insect repellents date back to ancient times, with the use of tars, smokes, plant oils and other modalities [2]. Advancements of chemical sciences have formulated various synthetic repellents and advocated. However, constant and indiscriminate use of these synthetic repellents causes adverse effects on the users [3].

These synthetic pesticides have been extensively used for mosquito control by killing and thereby preventing adult mosquito to bite human beings or by killing mosquito larvae at the breeding sites of vectors. The deleterious impact of these synthetic formulations on non-target population and the development of resistance have brought about the search of alternative, simple and sustainable methods of Mosquito control. The need for development of effective insecticides should be taken in to consideration due to toxicity problems, together with the increased incidence of insect resistance [4]. In the most part of the world, synthetic chemical larvicides continue to be applied for controlling mosquitoes but many of these chemicals are toxic to human, animal and plant life and resistance can be problematic in regulating the control. Therefore, researchers are currently exploiting natural substances to be used as insecticides for controlling larval mosquitoes. These formulations are safe, eco friendly, cheap, easy to use and have maximum repellence against mosquitoes. Hence, an effort was made to prepare cow dung based herbal mosquito repellent.

Studies have shown that many plants have evolved aromas that repel mosquitoes and other herbivores [5]. Topical application or fumigation of herbal products have been used as repellents either as and many plant species showed mosquito

repellent and insecticidal property [6]. The seasonal evaluation of the efficiency of cow urine in producing ovipositor cues to *Anopheles gambiae* and *Culex quinquefasciatus* have been thoroughly studied [7].

## II. MATERIALS AND METHODS

### i. Raw Materials:

Raw material has been selected based on experience, traditional knowledge and practice by ancestors. Cow dung contains plenty of Menthol, Ammonia, Phenol, Indol, Formalin and specially its bacteriophage eradicate the pathogens and are a recognized disinfectant [8].

Sometimes cow dung only is used for fumigation after drying under sunlight and sometimes cow dung is used as mosquito repellent in combination with other herbal products. Plant products are emerging as a potential source of mosquito control and among them essential oils have special interest due to their insecticidal properties. Here, we are reporting some of the herbal ingredients that we have found in various papers. LemonGrass Oil (*Cymbopogon lexiuosus*), Tulsi (*Ocimum sanctum*), Neem (*Azadirachta indica*), Maida, Saw dust, Loban (*Styrax benzoin*), Rui (*Calotropis gigantea*), Durva grass (*Cynodon dactylon*), Ashoka (*Saraca asoca*), etc.

### ii. Preparation

By using mortar and pestle, the plant products were crushed using distilled water and were mixed with fresh cow dung; papers show that the cow dung and plant paste were mixed in 1:1 ratio.

### iii. Formulation

Agarbatti (Incense sticks), Coils, Cards, Candles, etc. were prepared using the mixture. In case of Cards, the mixture was smeared on Whatmann No. 1 Filter paper. In all types of preparation, either they were dried in the oven at 70°C for 6 hr and further kept in the room for half an hour for drying, or they were kept under sunlight for drying.

## III. RESULTS

We have found that some experiments were conducted with two glass chambers filled with mosquito and in one commercially available synthetic chemical repellent was used and in other the repellent containing cow dung was used.

According to Palanisami, Natarajan and Rajamma (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.[9]

Based on these observations, it is clear that the burning of mosquito repellent prepared with cow dung reduces mosquito population without having any release of synthetic chemical gases.

#### IV. DISCUSSION

Cow dung alone or in combinations with those obtained from other mosquito repellent plant species, could be potentially used for the preparation of mosquito repellent products.

#### V. CONCLUSION

The ingredients of cow dung and phytochemical compounds of plant extract are responsible for mosquito repellence. The mosquito coils available in market creates heavy smoke that can generate respiratory problems especially for patients of Asthma, COPD and other respiratory diseases. The cow dung 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. Production of these natural repellents with cow dung may help common man in earning more money.

#### ACKNOWLEDGEMENT

Authors are thankful to MOIC, Blood Centre, Superintendent, North 24 Parganas District Hospital and Registrar and HOD, Brainware University for their kind help.

#### CONFLICT OF INTEREST

None declared.

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