Hong Kong Student Science Project Competition 2022

Template of Extended Abstract (Invention Design Proposal)

(Word Limit: 1,000 words, Pages: 2 pages only)

Team Number: JCBC276
Project Title: Mosquito Vetoed
Project Type: Invention Design Proposal

To our best knowledge and after thorough literature research, as at 28/_6_/2022 , there are / are no* similar works. If there are, the reference links are as below:

http://www.mrlight.com.hk

The enhancement our project has made for the existing related products or research is summarized as below:

Solar panel is used for the energy supply of the light and the light is portable.

***Please delete if not applicable. HKSSPC values the originality of works. Students must conduct literature research thoroughly to ensure that their works are unique, and to list relevant reference materials to complement the research or invention.**

I. Background

This device is for all the people who are affected by mosquitos or mosquito bites.
According to the studies from International Journal of Mosquito Research—Effective mosquito repellent from plant based formulation and Indian Journal of Medical Research—Plant extracts as potential mosquito larvicides, lantana, lemongrass, calotropis, tulsi and neem are the most effective essential oils that can repel mosquitoes. From the products of MRLIGHT, yellow LED light with 530nm-590nm wavelength is the most effective light that can repel mosquitoes. However, there's no device that can repel mosquito by both smell and light. The devices that can repel mosquitoes are not easy to carry too. Therefore, we want to make a device that can repel mosquitoes by light and smell, which is a small and convenient device for users to repel mosquitoes.

II. Objective(s)

It is summer now, the peak time for mosquitos to thrive. Especially in Hong Kong, we have humid air and hot temperatures here. Not to mention all the rain we get during this season. Mosquitoes and flies lay eggs in water. With so much water everywhere, it is safe to say there are tons of mosquitos attacking people every summer. Many people are always being bit by mosquitoes, while they go away without consequences and to find another victim. Because of this, our aim is to make a device that would prevent mosquitoes from coming near us.

III. Methodology

We need to test which colour of light, type of essential oil, the wavelength of light will repel the largest of number of mosquitoes. The materials include: 10 mosquitoes each for each experiment, different types of essential oils, different colour of light. Certain colour of light like red and especially yellow can attract fewer mosquitoes. Mosquitoes are also attracted by body odour. Therefore, we use essential oils to cover our smell and repel them.

IV. Design of Invention

Device shape: cube
Red button: light switch (O: open, I: close)
Light: yellow LED light with 530nm-590nm wavelength
5 compartments with lids: store essential oils (provision of 5 essential oils - lantana, lemongrass, calotropis, tulsi, neem)
A compartment with lid: a place to mix essential oils (users can take out the essential oils and mix the essential oils they like in this place. The device will give out a fragrance that can repel mosquitoes)
How to use:

1. Take out the device when you see mosquito
2. Press the button to open the light to repel the mosquitoes. Yellow LED light will be given out
3. Take out the essential oils you like and mix them in a large space. A unique fragrance will be given out to repel mosquitoes

V. Application / Market Need

People can use the invention during spring or summer, where there are a lot of insects, especially mosquitoes. The device can repel mosquitoes and prevent them from biting people.
With this invention, the potential impact is that it lets people have more options to choose from to prevent mosquitoes.
The limitation of the product is that people can only use it themselves as the effective range of the device is only limited to one person.

VI. Conclusion

Our device can be used to help people in need of it. We can collect all the materials needed and start to build the device.