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Amosectkit

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ABSTRACT

Insects such as flies and mosquitoes are such an annoyance to everyone. It causes discomfort towards people and one of the main sources of diseases such as malaria, dengue and cholera. Common insect repellents that we often see on sale are electronic and aerosol which are not eco-friendly. For example, aerosol contains chlorofluorocarbon (CFC) that are harmful to the environment and community. In fact, most electronic insect repellents are sold at higher price in the market. Hence, this project was studied to solve these problems by replacing hazardous insect repellent with safer and eco-friendly insect repellent which is “Amosectkit” that consists of insect repellent gel, spray and bracelet. The first objective of this project is to conserve the environment and ensuring environmental sustainability. The second objective is promoting the insect repellent kit at affordable price and lastly is creating a handy and travel-friendly insect repellent kit. The three items in Amosectkit are eco-friendly and non-toxic as they are made from mixture of natural ingredients that was proven effective to repel flies and mosquitoes such as lemon, lemon grass, oregano and basil. Moreover, this kit also contains refill so that it will be easy for users to refill once it used up. This product is targeted to be used by everyone. For instance, outdoor lovers can take this kit with them while camping, hiking or travelling while non-outdoor lovers can still use this kit inside their home. In conclusion, the future development is to produce a formulation that could enhance the longevity of the repellents using advance laboratory equipment. Nevertheless, improvements in terms of packaging into a more creative shapes and sizes are necessary in the future to meet the interests of consumers.

Keywords: Insects; diseases; eco-friendly; environment; repellent

1. INTRODUCTION

Insects are known to be vectors for pathogen that causes diseases such as malaria, cholera and dengue. Nowadays, the cases of the diseases that caused by insects such as mosquitoes and flies are rapidly increasing. For example, malaria that caused by Anopheline mosquitoes have been recorded to cause an estimated of 219 million cases globally and results in more than 400 deaths each year [1]. Other than that, dengue that are transmitted by Aedes mosquitoes are the most frequent parasitic infections that causes about more than 3.9 billion people in over 129 countries are at risk of contracting it with an

estimated 96 million symptomatic cases and estimated 40,000 deaths every year [1]. These problems are concerning and need to be catered to prevent it from becoming a lot more severe.

In general, the insect repellent are made to cater this problem. However, a long-term applications of synthetic insecticides can caused hazardous residues to accumulate into the environment which affects the ecosystems and human health. The synthetic insecticides such as aerosol spray insect repellents are not eco-friendly and the chemical substances inside it which is chlorofluorocarbon (CFC) have bring harms to the environment as it can cause to the thinning of ozone layer. Furthermore, there are various chemical substances in the insect repellent that could bring harms not only to the environment but also towards humans such as DEET, cyfluthrin, and permethrin [2]. In instance, DEET or N,N-Diethyl-metatoluamide is a common substances that used in insects sprays, wipes and in clothing repellents and are highly effective at repelling mosquitoes [2,3]. Even though DEET is very effective to repel bugs, studies have shown that it could harm human health. Large doses of DEET have been linked to skin blisters, seizures, memory loss, headaches and many more [2]. In addition, it also a persistent environmental contaminant that breaks down slowly in the soil and contaminated the groundwater. It have been detected in groundwater, surface water and also drinking water. Therefore, this project were made to cater the problem and at the same time saving the environment and humans health.

This project which called Amosectkit is an insect repellent kit that contains gel, spray and bracelet that are eco-friendly, non-toxic and are easy to handle. These repellents work by deterring insects such as flies and mosquitoes that find the smell of gel and spray unappealing. This repellent product is made from a mixture of basil and lemongrass that contains active compound that could repel certain insects. For instance, the active compounds that can repels flies and mosquitoes in basil are linalool, estragol, geraniol and methyl eugenol [4,5]. Furthermore, in lemongrass, the main active compounds that repels insects are Geranial (α -citral) and neral (β -citral) but other compounds, such as geraniol and citronellol, which are known repellents, are also present in small amounts [6].

This product is invented to replace hazardous insect repellent with safer and eco-friendly insect repellent to save the environment and at the same time protects the human's health. The first objective is to conserve the environment and ensuring environmental sustainability. The second objective is promoting the insect repellent kit at affordable price and lastly is creating a handy and easy product that could be carry anywhere and everywhere. This product is targeted to be used by everyone. In addition, a low price is offered to public and are eco-friendly which consists only herbs such as basil and lemongrass. This kit is very useful as it has three component which is spray, gel and bracelet. Furthermore, it also contains refill as it will be easy for the users to refill once it used up. This product could as well bring comfort to people as they can protect themselves from insects everywhere they go without bringing big aerosols and other stuffs that is hard to handle.

2. INNOVATION DEVELOPMENT

It is designed to be used by all people in the community and suitable for all ages. This product is also convenient, travel-friendly which can be used anywhere such as home, picnic and even during camping. As for example, college students can keep their window open without any worries by the help of Amosectkit to get rid of those mosquitoes as well as can leave their ventilation in the room running smoothly. The product is safe because it is 100% natural made from a mixture of basil, lemon and lemon grass extract based on our research and we guarantee it can repel dangerous insects away. Our research shows that a scent in the extract that we derived is hated by insects. So, as basil, lemon and lemon grass extract as our main ingredients for this kit, we made a 3 in 1 kit which consists of insect repellent spray, gel and bracelet. The gel can be leave open by the window or in areas that tends to have mosquitoes meanwhile the spray can be sprayed to our skin or surroundings and the bracelet we can wear to defend ourselves from being a victim of mosquitoes. We provide various way of application in the kit to use the product. The consumers do not have to worry about dangerous chemical issues or allergic issues because our product is made up of authentic natural herbs which is safe to be used by everyone.

3. COMMERCIAL POTENTIAL

We are creating a low-cost budget and chemical-free product naturally extracted from a mixture of basil, lemon and lemon grass and turned into a kit with multi-purpose application by using these materials (refer Table 1). It is easy to be refilled as the refill is already provided in the kit. This product is designed for the Malaysian public sphere as a convenient and affordable insect repellent kit.

Table 1

No.	Item	Quantity (Set)	Price per unit (RM)	Total price (RM)
1.	Bassil leaves	1 packet	4.20	4.20
2.	Lemon essential oil	10 drops	6.00	6.00
3.	Lemon grass essential oil	10 drops	6.00	6.00
4.	Agar-agar tali	1	2.15	2.15
5.	Travel kit	1	5.00	5.00
6.	Knitting thread	1	2.00	2.00
			TOTAL	25.35



Figure 1: Innovation prototype
Market Price: RM 30.00

4. CONCLUSION

In conclusion, our insect repellent are eco-friendly, non-toxic, affordable and travel-friendly. They are free of dangerous DEET which are friendly and kind on sensitive skin. Other than that, many people can use natural organic repellents even in the presence of children, as they are free of such harmful chemicals and good for the human body. The future development for our product is this travel-friendly product has multi-function that can protect someone from dangerous insects wherever they go. The recommendation is we want to provide the ready-made ingredients for our product users to do their own insect repellent at home. For example, adults can simply make repellents by combining essential oils with water or carrier oils, such as coconut or soybean oil, to either use as a room spray or apply topically. Nevertheless, we recommend that this product will need adult's helps as we need to use lab equipments to make this product. We also recommend not to leave the kids and young adults to do it by themselves without adult's supervision.

On the other hand, the improvisation planning is we want to improvise our product into a lot more creative shapes, sizes and various types of smell. Next, we also want to provide a patch test as some people may find that their skin reacts to essential oils, so it is important to do a patch test on a small area of skin first. This is because we really take consideration of everyone's wellbeing and ensure product safety. We believe our future recommendations and improvements on our products will lead us to achieve our initial objective which is to provide harmful insect repellent for everyone.

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