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How Organic Pesticides Are More Beneficial Than Synthetic Pesticides

[1]Manjinder kaur, [2]Arshdeep kaur & [3]Dr. Harleen kaur

[1,2]Research Scholars, PG Department of chemistry, Dev samaj college for women, Ferozepur city (India)
[3]Asst.Professors, PG department of chemistry, Dev samaj college for women, Ferozepur city, Punjab (India)

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ABSTRACT

The impact of pesticides consists of the effects of pesticides on non-target species. Pesticides are chemical preparations used to kill fungal or animal pests. Over 98% of sprayed insecticides and 95% of herbicides reach a destination other than their target species, because they are sprayed or spread across entire agricultural fields. Pesticides are the substances that are meant to control pests or weeds. The term pesticides includes all the followings : Herbicides, Insecticides, Insect Growth Regulator, Neaticides, Termicides, Molluscicide, Avicide, Rodenticide, Bactericide, Insect Repellent, Antimicrobial, Fungicides, Sanitizers, Disinfectant(Antimicrobial). The use of chemicals in modern agriculture has significantly increased the productivity.
But it has also significantly increased the concentration of pesticides in food and in our environment, with associated negative effects on human health as well as on flora and founa. Most pesticides are intended to serve as plant protection. In recent time, more than 800 different kinds of pesticides are used for the control of insects, rodents, fungi and unwanted plants in the process of agricultural production. Although most of them degrade in soil or leave the products, water and atmosphere, some trace amounts of pesticide residues can be transferred to humans via the food chain, being potentially harmful to human health. The aim of present study is to synthesize organic pesticide and to observe its impact on environment as compared to synthetic pesticides.

1. Introduction

Few environmental issues have aroused the concern of the public as much as pesticides, especially in relation to the health of children [1,2,3]. In spite of the many published studies on the subject of pesticides and human health, there remains deep controversy surrounding this issue. This report will try to elucidate the results of the many studies of pesticides and health, and draw conclusions as to the true health effects of pesticides [4].

To understand this controversial issue it is helpful to look at the history of pesticide use. Prior to (*World War II*), the pesticides that we use now did not yet exist. Some pesticides currently in use were in fact developed during the *World War II* for use in warfare. The organophosphate insecticides were developed as nerve gases, and the phenoxy herbicides, including 2,4-D (the most commonly used herbicide in Canada), were created to eradicate the Japanese rice crop and later used as a component of Agent Orange to defoliate large areas in jungle warfare. After World War II, these chemicals began to be used as pesticides in agricultural production, for environmental spraying of neighbourhoods for mosquito eradication, and for individual home and garden use [6].

Since 1990, when the municipality of Hudson, Quebec passed a by-law restricting the use of cosmetic pesticides on public and private property, pesticides have received considerable media attention in Canada. In 1991, two lawn-care companies challenged the Hudson by-law on the grounds that pesticide use was not within municipal jurisdiction. The court affirmed that municipalities do indeed have the power to pass by-laws regarding pesticide use, so the lawncare companies appealed the ruling. In 2001, the Supreme Court of Canada upheld the municipality's right to pass the by-law. Interestingly, although the health effects of pesticides were not argued during the Supreme Court challenge, the judgement implied that this had been an important factor in the Court's decision. Since then, many municipalities across Canada, including Toronto and Halifax, have passed by-laws restricting the cosmetic use of pesticides. Cosmetic use of pesticides remains a complicated issue involving arguments about the rights of lawn-care and pesticide companies, property owners' rights, and increasingly, the health effects of pesticides. During the 1960s and 1970s, epidemiologists in the USA noted a rise in the incidence of nonHodgkin's lymphoma (NHL). When plotted on a map of the USA these cases were clearly clustered in agricultural areas. This increase in NHL incidence paralleled the rise in pesticide use, prompting some epidemiologists to theorize that there was a causal link. Rachel Carson's revolutionary book, Silent Spring. first published in 1962, started the slow process of raising political and public awareness of the hazards posed to wildlife, humans, and the ecosystem by the use of pesticides [7-8].

2. Experiment

To synthesize the organic pesticides, all the ingredients aloevera (30 g), green chillies (8-10), garlic (8-10 pieces), vim liquid (2-3 drops) needed for the synthesis of organic pesticide were of best quality has been purchased commercially. Pretreatment of aloevera, green chillies and garlic was done by washing them with distilled water. Sap of aloevera was extracted from plant and was grinded with the help of mortar and pestle. In the similar manner green chillies and garlic were also grinded and mixture of all the three ingredients was

collected in 500 ml beaker. After this, two cup of double distilld water was added to above mixture and rest it for 24 hours. After 24 hours, the few drops of Vim liquid (Antibacterial) were added into the above prepared solution. The resulting synthesized liquid was transfered into the 500 ml bottle which had been served as a organic pesticide.

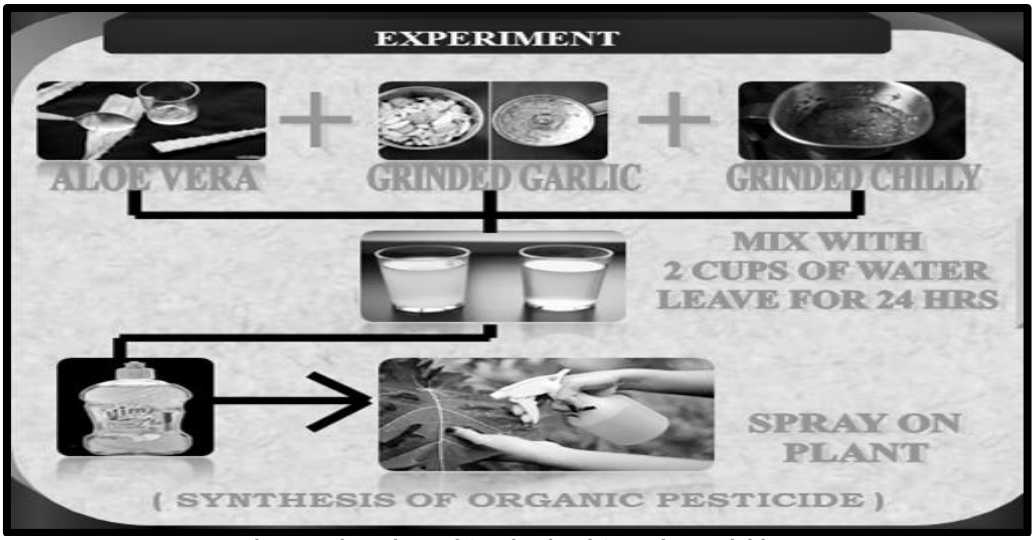


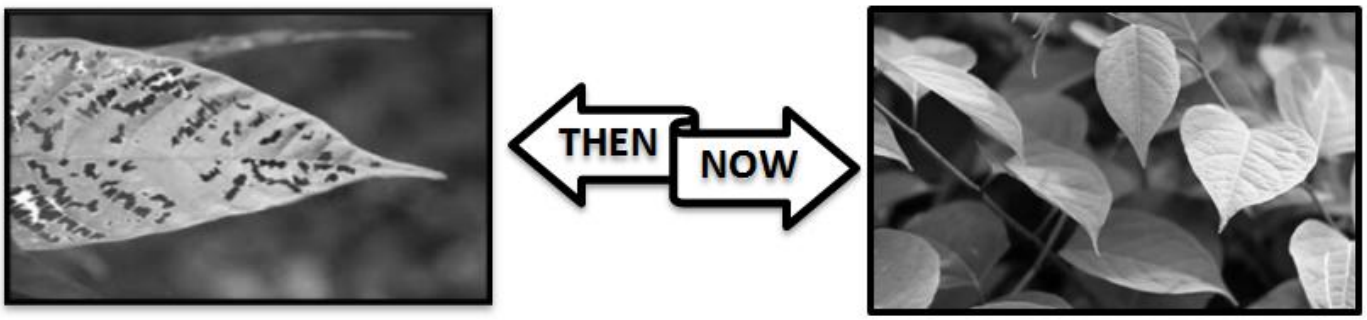
Fig. 1.1 Flow chart of Synthesis of Organic Pesticides

3. Results And Discussion

About 400 ml of organic pesticide was obtained by using 30 g aloevera, 8-10 green chillies, 8-10 pieces garlic, 2-3 drops of vim liquid. As the impact of synthesized organic pesticide (about 400 ml) was obseverd on plants, animals environment, human beings, animals.

3.1. Impact on Plants

After spraying the organic pesticide on plants there observed that the plants get cure from pests, started growth with high quality of yield. Plants get free from diseases like Necrosis [9]. This result as shown as below:-



(a) **(b)**

Fig. 1.2 (a) Plants are suffering from Necrosis, (b) plants get free from necrosis after spray of synthesized organic pesticides on it.

There observed that the vim liquid formed the protective layer on the leaves of the plants, so that the plants can cure from pests, and free from Necrosis like disease.

3.2 Impacts on Human Beings

3.2.1 Nutrition

The vitamin and mineral content in organic foods are higher than those in conventionally produced foods. Going organic can provide mental and physical benefits, long- term money savings, and increased vitamin and minerals in food [10]. Organic food is higher in certain key areas such as total antioxidant capacity, total polyphenols, and two key flavonoids, quercetin and kaempferol, all of which are nutritionally significant Aloevera can complement many treatments and boost the effectiveness of some medicinal substances by increasing their rate of absorption. Organically grown products contained higher total phenolics. Phenolics are important for plant health (defense against insects and diseases), and human health for their “potent antioxidant activity and wide range of pharmacologic properties including anticancer, antioxidant, and platelet aggregation inhibition activity.”

3.2.2 Farmworker Health

The population groups most affected by pesticide use are farmworkers and their families. These people live in communities near the application of toxic pesticides, where pesticide drift and water contamination are common. Pregnant women working in the fields unwittingly expose their unborn babies to toxic pesticides. Organic agriculture does not utilize these toxic chemicals and thus eliminates this enormous health hazard to workers, their families, and their communities [11].

3.3. Impacts on Environment

Ongoing organic, there seek to live a cleaner, healthier existence and in a more *Earth-friendly* or *Eco friendly* way. It helping to improve the environment and decreasing the

chances of accelerated disease in your family. Not only does organic farming build healthy soil, but it helps combat serious soil and land issues, such as erosion [12]. A major study comparing adjoining organic and chemically treated wheat fields showed that the organic field featured eight more inches of topsoil than the chemically treated field and also had only one-third the erosion loss.

Biodegradation is a process by which a pesticides is transformed into a benign substance that is environmentally compatible with the site to which it was applied. Degradation or breakdown of pesticides can occur in the plants, animals and in soil and water, most comman type of degradation is carried out in the soil by microorganisms, especially fungi and bacteria that use pesticides as food source [13].

3.4 Impacts on Animals

Aloevera used for synthesized this organic pesticides containind a compound Acemannan found in Aloe Vera gel, stimulates immune system response, and has increased the effectiveness of many veterinary vaccines [14,15]. This gel is gentle enough to use on delicate eye and ear tissue and makes a versatile topical treatment. The herbicide paraquat, when sprayed onto bird eggs, causes growth abnormalities in embryos and reduces the number of chicks that hatch successfully, but most herbicides do not directly cause much harm to birds. Herbicides may endanger bird populations by reducing their habitat.

4. Conclusion and Discussion

In recent time, more than 800 different kinds of pesticides are used for the control of insects, rodents, fungi and unwanted plants in the process of agricultural production. Although most of them degrade in soil or leave the products, water and atmosphere, some trace amounts of pesticide residues can be transferred to humans via the food chain, being potentially harmful to human health. The aim of present study is to synthesize organic pesticide and to observe its impact on environment as compared to synthetic pesticides.

Exposure to all the commonly used pesticides — *phenoxyherbicides, organophosphates*, *carbamates, and pyrethrins* — has adverse health effects due to harmful pesticides . Triazine herbicides increased breast cancer risk. Carbamate and phenoxyherbicide exposure increased lung cancer risk. Spraying of an organophosphate during pregnancy caused deterioration in placentas. Indoor use of insecticides was associated with brain cancer and acute lymphocytic leukemia in children. Six pesticides, including 2,4-D and Dicamba, were associated with increased time to pregnancy. Fungicide exposure had positive associations with dermatitis. pyrethrins were associated with chronic psychiatric effects, chromosome aberrations, rashes in licensed pet groomers, and intrauterine growth retardation, which are less toxic in acute poisoning. The glyphosate and glufosinate of herbicides had associations with congenital malformations. Parental preconception exposure to glyphosate was associated with late abortion. The vitamin and mineral content in organic foods are higher than those in conventionally produced foods. Going organic can provide mental and physical benefits. There seek to live a cleaner, healthier existence and in a more *Earth-friendly* or *Eco friendly* way. It helping to improve the environment and decreasing the chances of accelerated disease in your family.

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