

Assessing The Safety And Importance Of Natural Pesticides: A Review

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ABSTRACT:

Long term application and broad utilization of engineered insect sprays have brought about collecting their build-ups in food, milk, water, and soil and cause unfavourable wellbeing impacts to human and environments. Subsequently, utilization of regular insect sprays in farming and general wellbeing areas has been expanded as option in contrast to manufactured insect sprays. Therefore, the review presented here focuses on the safety of natural insecticides. Natural pesticides are important that conserve the environment and promotes biodiversity. By applying the various Methods can develop a new variety of improved seeds. Phytochemicals Such as alkaloids, lipids, carbohydrates, amino acids, are Essential in the production of several natural pesticides. This is mostly focussed on natural agrochemicals with preservation potentials of crop and better climatic conditions. This review concludes the various plants Developed by natural pesticides each having specific. Activity can show more impact on human health as well as controls pollution hazards in our environment.

Keywords: Natural pesticides, Phytochemicals, Agrochemicals, pollution Hazards, climatic conditions.

I. INTRODUCTION:

During the beyond thirty years, endeavours have been made to decrease the openness and human danger of pesticides, particularly insect sprays. There is extraordinary interest for specific and safe bug sprays that extra normal adversaries and non-target living beings. Regular pesticides will be pesticides that are made by different living beings ordinarily for their own

safeguard, or are gotten from a characteristic source like plant, creature, microscopic organisms, and certain mineral.

Around 80% of pesticides applied enter different ecological assets because of run-off, uncovering animals, and ranchers just as buyers of the horticultural produce to serious medical condition. Regular pesticides or "diminished danger" pesticides are normal mixtures that viably control bug bugs, with low poisonousness to nontarget life forms like people, creatures and regular adversaries and the climate. The majority of regular pesticides separate rapidly in daylight so they ought to be put away in murkiness for adequacy. Both profoundly antacid and exceptionally corrosive conditions accelerate debasement or separate these kinds of pesticides [2].

The normal regular pesticides use are Neem, Bacillus thuringiensis (Bt), Nicotine, Rotenone, Pyrethrins, Sabadilla, Fluoroacetate, carboxin, and Rynia. Plants and some microorganism produce numerous regular synthetics that they use for their own guard against creepy crawlies and infection organic entities. Regular pesticides for plants additionally are viewed as those synthetic produced using normal fixings. Individuals accept that normal pesticides are consistently protected and more eco-accommodating than man-made or manufactured pesticides and keeping in mind that this is for the most part evident yet it isn't generally so for instance, nicotine as a characteristic pesticide in tobacco leaves, and the exceptionally habit-forming part of tobacco smoke, yet it is considerably more poisonous than most current engineered or man-made pesticides. While some normal pesticides are

additionally harmful many are in reality much protected and more eco-accommodating than engineered pesticides. Since regular pesticides are likewise exceptionally compelling, it ought to be the best option for generally home and homestead both control needs [3].

Synthetic compounds attack or enter the body at pretty much all day long. They might come through air, food, items use on the body, and in drinking water. Poisonous development of these synthetic compounds has been displayed to cause a few harm in the body and limit wellbeing. Numerous cutting edge pesticides (manufactured) utilized persevere in soil for quite a long time and compound the store of poisons like substantial metals in the dirt, air and water. [4, 1]

Since before 2000B.C, humans have utilized pesticides to protect their crops. The first known pesticides are elemental sulphur dusting used in ancient summer about 4000 B.C. years ago in ancient Mesopotamia. The Rig-Veda, which is about 4000 years old, mentions the uses of poisonous plants for control. By the 15th century, toxic chemicals such as arsenic, mercury and lead were being applied to crops to kill pests.

In the 17th century, nicotine sulfate was extracted from tobacco leaves for a use of insecticides. In the 19th century, saw the introduction of two more natural pesticides Pyrethrum, which is derived from the chrysanthemum and rotenone, which is derived from the roots of tropical vegetables. Until the 1950s, arsenic based pesticides were dominant. Paul miller discovered the DDT, was a very effective insecticides. Chlorinates such as DDT, were dominant, but are replaced in the U.S. by organophosphates and carbamates by 1975. Since then pyrethrum compound have become dominant for insecticides.

Herbicides become common in the 1960s, led by triazines and other nitrogen based compounds, carboxylic acids such as 2, 4 dichlorophenoxy acetic acid and glyphophates. The first legislation provided federal authority for regulating pesticides enacted in the 1910. However decades later during 1940s manufacturers began provide large amounts of synthetic pesticides and their use became widespread. Although the environmental protection agency was established in 1970s and amendments to the pesticides law in 1972.

In the 1960s it was discovered that DDT was preventing many fish eating birds from reproducing, from which was a serious threat to

biodiversity. Rachel Carson wrote the bestselling book about silent spring by biological magnification. The agricultural use of DDT is now banned under the Stockholm convention on persistent organic pollutants. But it is still used in some developing nations to prevent malaria and other tropical diseases by spraying on interior walls to kill or repellent mosquitoes. [5]

Definitions:

Natural pesticides: Natural pesticides are defined as that come from natural Sources either from plants or mineral derivatives uses to control pest naturally.

BIOPESTICIDES:

Bio pesticides are biochemical pesticides that are naturally occurring substances that control pests by non toxic mechanisms.

Bacillus THURINGIENSIS is a gram positive, soil dwelling bacterium, used as biological pesticides. It also occurs naturally in the gut of caterpillars of various types of moths, aquatic environment. [6]

Pest: Pest is a general term used to describe any organism (usually insect or animal) that is harmful to our health and properties include crops and live stocks. The term in its broader sense includes microorganisms, parasitic plants and weeds.

Pest management: It is defined as the method of reducing or eliminating different types of unwanted creatures such as ants, cockroaches, wasps, spiders, bees, silver fish, termites, bedbugs, from places occupied by humans. [6]

IMPORTANCE OF NATURAL PECTISIDES:

1. Natural pesticides have importance in maintaining and improving fertility, soil structure and Biodiversity and reduce erosion. Reduce the risks of human, animal, and environment Exposures to toxic material and natural crop production.
2. Facilitating development of organic agriculture production, breeding, and processing methods.
3. Evaluating potential economic benefits to producers and processors.
4. Developing new and improved seeds varieties of suited for organic agriculture.
5. Organic food produced by methods that comply with the standard of organic farming.
6. It reduces pesticides use, protection of environment, saves energy, promotes biodiversity, Global warming, supports the local economy.

7. Pesticide conserve the environment
8. Enhancing production is the need and demand of farmers. Many factors can improve Farming productivity. ⁽⁸⁾

CLASSIFICATION OF NATURAL PESTICIDES:

1. Insecticides
2. Fungicides
3. Bactericides
4. Herbicides
5. MITICIDES
6. Rodenticide
7. LARVICIDES
8. Algaecides

1. Insecticides: insecticides are used to control insects. e.g. carbamates, pyrethroids.

Mode of action: movement of the plant feeding Block contact stomach block Action in the plant inhibit protein synthesis, photosynthesis,

- Contact poisons: through inhalation or ingestion.
- Systemic poison: where the insect will contact or ingest it attractants.
- Pheromones: These are biochemical either released by the animal or synthesized when attracted.
- Baits : Baits are chemicals which entice animals for reasons other attraction Like food attraction repellent

2. Herbicides: these are used to inhibit the growth of unwanted plants known as weeds. E.g. Atrazine, cyanazine. Herbicides are applied by 3 methods:

- Contact: contact with the chemicals. E.g. flumetsulam , metosulam.
- Systematic E.g. Dinoseb.
- Soil applied pre plant incorporated E.g. Binapacryl

Mode of action: Herbicides movement in the plant contact Trans located action in. The plant inhibits protein synthesis, photosynthesis or growth

3. Fungicides: to control fungal problems like MOLDS, mildew and rust. E.g. Mancozeb, manebnabam .

Mode of action: fungicides are chemical compounds used to kill or inhibit fungi. Fungi can cause serious damage in agriculture and yields critical loss of yield.

- Movement in the plant contact Trans laminar.
- Redistribution from surface leaf to lower systemic.
- Redistribution through the xylem vessels action in the plant⁽⁹⁾

4. Bactericides: inhibits the growth of bacteria E.g. DDT, LINDANE

5. Miticides: This inhibits the growth of mites E.g. Adobenzene , dicofol, tetra difon, ovex.

6. Rodenticide: inhibits the growth of rodents. E.g. bromethalin, cholicalciferol , zinc phosphide, strychnine .

7. Larvicides: inhibits the growth of larva E.g. Bacillus thuringiensis israelensis, larvicides bacillus sphericus.

8. Algaecides: inhibits the growth of algae E.g. copper sulphates, iron salts, rosin amine salts, benzalkonium chloride ^(7, 8)

METHODS OF PEST CONTROL:

1. Natural control
2. Artificial control
 - a) Mechanical
 - b) Agriculture
 - c) Chemical
 - d) Biological



Figure 1.natural pesticides

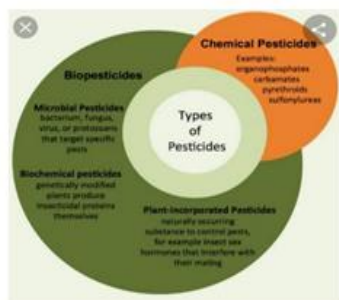


Figure 1.2 types of natural pesticides



Figure 1.3 methods to control pest

1. **Natural method:** Topographical influence of the season Changes, changing temperature, soil, rainfall, Atmospheric humidity and other natural sources also Shows their effect on insects and their host.
2. **Artificial method:** Artificial control of pest has been developed by man. These methods are categories as mechanical, agricultural, chemical, biological
- a) **Mechanical control:** In this method by using manual labour as well as Mechanical devices for collection or destruction of pest like hand picking, trapping, burning are employed for the destruction of eggs, larva, and adult insects.

The mechanical methods includes as follows:

1. Hand picking of pests.
E.g. large caterpillars (large green attractive larva) can be located rapidly and removed by hands, weeds are removed from hand picking.
2. Remove the part or whole plant that is diseased.
3. Burning of pests.
4. Pruning: The tent caterpillars gather on branches of trees and shrubs. By pruning or cutting of such branches is an effective measure.
5. Trapping of insects: Insects are trapped by pleasantly flavoured (rose oil or anise oil is mixed with sawdust.) Attractants placed in funnel shaped containers. The Insects can easily get enter in the trap but find it very hard to come out.
6. Metal reinforcements corners on Window frames and door sills are use to the Access of insects to storage shade and barns.
7. Modern concrete warehouse are helpful to control rodent.

a) **Agricultural control:**

- It is the oldest method .It includes deep ploughing and eradication of weeds and early stages of insects. Alternate crop rotation and of changing environment conditions are some

methods which leads to Obstruction of life cycle of pests.

- Plants can absorb sufficient organic phosphorus compounds through the roots
- Roots and foliage to cause the death of insects eating the leaves.
- Crop rotation is another useful method of agriculture. Growing pest resistance varieties and proper use of fertilizers. Proper sowing.

C) **Biological control:**

Biological control by plant or animals for controlling many Harmful pest. Use of biological agents to control pests like control. There are certain predators, parasites, birds, animals, microorganisms, used for control of Pest. This is the best method for controlling pests. ^[10]

d) **Chemical methods:** In these methods, chemicals that kill the pest are used. These Chemicals are called as pesticides. It is effective and faster as compared to other Methods but it is harmful to environment. In proper use of these chemical leads to development of resistance among the pests Like DDT, BHC, and pentachlorophenol. DIELDRIN, ENDRIN, ENDOSULPHAN, Chlordane.

Organophosphorus: Malathion, Parathion, Methyl parathion, Fenetrothion, Thiometan, Dimethoate, Phorate, Tetra ethyl pyro phosphate

CARBAMATES: CARBO furan, PROPUXUR, ADDICSRP, Phenyl CARBAMATES

TRIAZINES: Atrazine, Simazine ⁽⁹⁾

LIST OF NATURAL PESTICIDES:

1. **Neem:** Botanical name of neem is Azadiractha indica, belongs to family Meliaceae. It is also known as nim , vepa .Extracts of neem leaves, flowers, seeds Roots, I.E whole plant is used traditionally for the treatment of Inflammation, fever, dental , skin diseases neem leaf Extract shows anti inflammatory

Antifungal activities. This plant has long been used in ayurvedic and folk Medicine, used in cosmetics. Pesticide target for aphids, mites,

files, moths by using different solvent extracts like distilled water, acetone, ethanol.



Figure 1.4 steps in preparation of Neem seed

2. **Pyrethrum:** Botanical Name is *Chrysanthemum cinerifolium*, belongs to family composite. Which have Anti-insecticidal activity by targeting the nervous systems of insects. It is the Crude extract form obtained from flowers of the *chrysanthemum pyrethrum*. Active substances are contact poisons for insects and cold blooded vertebrates. The concentration of pyrethrum powder used in insecticides is non toxic to Plants, birds, mammals. Used to treat head, body, pubic lice Infections. Its flowers show Antioxidant property. The pesticide target for insects, mosquitoes by using different solvent extract like hexane, ethanol, and petroleum ether.
3. **Tobacco:** Botanical Name of tobacco is *Nicotiana glauca*, belongs to family solanaceae. Tobacco is an agricultural product extracted from the fresh leaves of Plants in the genus *Nicotiana*. It contains nicotine an alkaloid that is addictive can Have both stimulating and tranquilizing effects. Its leaves extract shows antispasmodic, Anti helminthic property. Pesticide target for aphids, mites by using different solvent extract like petroleum ether.
4. **Derris:** Botanical Name of derris is *Derris elliptica*, belongs to family leguminosae. It has extracted from anti hypoglycemic root extract and leaf Extract of derris trifoliata was carried out. Derris is traditionally used for Antisepsis and applied to abscesses and against leprosy and itch. It root shows Anti insecticidal activity. Pesticide target for insects by using different solvent extract like acetone.
5. **Ryania:** Botanical Name of ryania is *Ryania speciosa*, belongs to family flacuvatiaceae. It was extracted from stem wood of ryania speciosa. The stem Extract is ryanodine. Its roots and stems posses anti feedant activity. Pesticide target for insects by using different solvent extract like acetates.
6. **Nuxvomica:** Botanical name is *Strychnos nux vomica*, belongs to family loganiaceae. It is extracted from dried, ripe seeds of *strychnos nux vomica* its seeds shows antidiabetic and anti oxidant activity. Seed is used to make medicine. It makes erectile dysfunction, anxiety, constipation, migraine swelling of the Stomach. Pesticide target for insects by using different solvent extract like petroleum ether, chloroform, alcohol.
7. **Lavender:** Botanical Name is *lavandula officinalis*, belongs to family lamiaceae. *lavandula* is a genus of known species of flowering plants in the Mint family. Distillation of lavender fresh leaf Extract from *lavandula angustifolia*. It treats anxiety, fungal infections, allergies, depression, insomnia, nausea. It improves sleep, remedy for pain. Reduces blood pressure, heart rate, etc. Its flowers shows anti bacterial and anti fungal activity. Pesticide target for moths, files,

- mosquitoes by using different solvent extract like hexane or alcohol.
8. **Petunia:** Botanical Name is *Petunia xatkinsiana*, belongs to family solanaceae. *Petunia* is a genus flowering plants of ornamental. It is extracted from fresh leaf of *petunia*. Used for colour masses, Borders, hanging baskets. Its leaves show anti bacterial. Pesticide target for mites by using different solvent extract like alcohol.
 9. **Garlic:** Botanical Name is *Allium sativum* linn, belongs to family liliaceae. The extract of garlic from ripe bulb of *allium sativum* Linn It improves Immunity, heart, brain health, Its stem shows anti microbial activity. Pesticide target for insects by using different solvent extract like ethanol, propanol, butanol.
 10. **Rotenone:** Rotenone works by interfering with the electron transport chain Within complex 1 in mitochondria. Used as an insecticidal, herbicidal, derived from The roots of *loncloucarpus* species. Pesticide target for beetles worms. Its roots and stems shows anti inflammatory, anti oxidant activity by using different solvent extract like chloroform.
 11. **Fluor acetate:** It occurs in *Dichapetulum cymosum* is a species of *gastrolobium* And *oxylobium*. Its leaves show rodenticide activity. Pesticide target for pests by using different solvent extract like ethanol, acetone.
 12. **CARBOXIN:** It is botanically obtained from anilide derivatives, belongs to family anilide. It is an effective agricultural fungicide. It is slightly toxic. It includes Vomiting and headache. Pesticide target for pests. Its seeds shows antifungal activity by using different solvent extract like chloroform
 13. **Sun flower:** Botanical Name is *Helianthus annus*, belongs to family Asteraceae. It usually grows to a height of about 1 to 5 feet. *sunflower* is extracted from fresh flowers of *Helianthus annus*. Its flower shows antimicrobial activity. Pesticide target for insects, moths by using different solvent extract like hexane.
 14. **Marigold:** Botanical Name is *calendula officinalis*, belongs to family Asteraceae. It usually grows to a height of about 1 to 5 feet. It is extracted from Fresh flowers of *calendula officinalis*. Its flowers has anti oxidant property. It treats headache, Wounds, skin problems. Pesticides target for mosquitoes, beetles, sand flies by using different solvent extract like hexane
 15. **Borage:** It is also known as star flower. *Borage* is extracted from annual herb of *Borage officinalis* its leaves shows anti bacterial, Anti viral property. Pesticides target for insects by using different solvent extract like ethanol
 16. **Sabadilla seeds:** Botanical Name of the plant is *Sabadilla officinalis*, belongs to family Liliaceae. Their seed shows antibacterial. Pesticides target for insects by using different solvent extract like kerosene extract.
 17. **Eucalyptus:** It has bark, smooth, fibrous, leaves with oil glands, sepals and petals that are formed to form a *Eucalyptus* aqueous Extract and leaf extract known as *eucalyptol*. May improve dental health. Its leaf shows anti viral activity. Pesticide target for beetles, mites by using different solvent extract like methanol.
 18. **Citrus:** Botanical Name of the plant is *cymbopogon citrus*, belongs to family Rutaceae. It is extracted from the fresh fruit of *cymbopogon citrus*. Its fruit posses the anti bacterial and anti oxidant activity. Pesticide target for mites, aphids by using different solvent extract like methanolic extract.
 19. **Cannabis:** The tough FIBER of the plant, cultivated as hemp. It has numerous textile uses its seeds used is caged birds feed, is a valuable source of energy, protein. The Active constituents known as cannabinoids. It has extracted from dried flowering pestillates of *cannabis sativum* Linn. Its seeds show antimicrobial, Anti bacterial activity. Pesticide target for insects, beetles by using different solvent extract like butane, propane.
 20. **Capsicum fruteceus Linn:** *Capsicum* consists of dried, ripe fruits of *capsicum minimum* or *capsicum annus* Linn belongs to family solanaceae. Its fruit posse's antibacterial, Anti

oxidant property. Pesticides target for aphids, insects by using different solvent extract like ethyl acetate.

Suffering from dengue fever. Pesticides target for grass hoppers, nematodes. Its fruit possesses antibacterial, anti oxidant, anti tumour, anti inflammatory by using different solvent extract like acetone^(8,9,18)

21. **Carica papaya Linn:** extract of leaf juice of papaya increases the platelet counts in people.

Plant	Biological source	Chemical constituents	Uses
1.Neem	Obtained from fresh leaves of Azadiractha indica Family : Meliaceae	Nimbin, Azadiractin, salanin.	Bark of neem , used as a good bitter tonic, malarial Fever , skin diseases, leprosy.
2.pyrethrum	It obtained from more expanded flower heads of chrysanthemum Family: compositae	Pyretrins, carboxylic acids, keto alcohols.	Insecticides, contact poisons
3.Tobacco	It Obtained from dried leaves of Nicotiana tobaccum Family: solanaceae	Pyridine alkaloids, nicotine, nicotimine ,anabasine, antibine	Sedative, Used in smoking, agricultural insecticides
4.Derris	It obtained from dried root and rhizome of Derris elliptica Family: leguminoseae	Iso flavanoid derivatives, degnelin Ephrosin	Contact poisons, used in form of spray for killing vegetables insects. E.g. leaf hopper.
5.Ryania	It obtained from dried root and stem of Ryania speciosa. Family: flacuovaticaeae	Ryanoid alkaloid	Insecticides
6.Nux vomica	It obtained from dried ripe seeds of Strychnous nux vomica Family: loganiaceae	Strychnine, Brucine, vomicine, Loganin	Used as an spinal cord stimulant, nerve and sex tonic, circulatory stimulant
7.Lavender	It obtained from distillation of the flower spikes of certain Lavandula officinalis Family: lamiaceae	Linalool LINALYL, acetate, terpinenpinene	Species used in aroma therapy, cosmetic use
8.petunia PAVIFLORA	It obtained from plant Petunia xatkinsiana Family: solanaceae	Anthocyanins , proanthocyanidins	Colour masses, Border container, hanging baskets.
9.Garlic	It obtained from ripe bulb of Allium sativa linn Family: liliaceae.	Allin, allicin , Allyl propyl, Ajoene .	High B.P high levels of cholesterol and cold and ortho arthritis .
10.Rotenone	It obtained from extraction from the roots and stems of several tropical plant species Family: Fabaceae	Methoxy groups	Insecticides Herbicides
11.fluoroacetate	It obtained from	Methyl	Pesticide

	Gastrolobium minus Family: Fabaceae	fluoroacetate	
12.carboxin	It obtained from anilide derivatives. Family: Anilide	NICOBIFEN, OXY CARBOXIN	Control seed and seedlings diseases
13.sunflower	It obtained from fresh flowers of Helianthus annus Family: Asteraceae	Stearic acid, Linolic acid , oleic acid	Folder sunflower oil used for stock and poultry feeding
14.Marigold	It obtained from fresh flowers of calendula officinalis Family: Asteraceae.	Lutin, piperitone, calendic acid	Headache, swelling toothache, Wounds, many skin problems
15.Borage	It obtained from borago officinalis Family: Boraginaceae	Gamma linolenic acid erucic acid	Fever cough, depression
16.sabadilla	Fresh seeds of sabadilla officinalis Family: Lily.	Celladine, veratrine, vanillic acid	Acute high fever
17.Eucalyptus	It obtained from hydro distillation of Fresh leaves of eucalyptus globus Family: myrtaceae	Eucalyptol, poly phenols	Air freshener ,medicinal teas cold and cough, aromatherapy
18.citrus	It obtained from fresh fruits of cymbopogen citrus Family: Rutaceae	Citral ,geraniol	Flavours, fragrance, cosmetic and soaps
19.cannabis	It obtained from fresh fruits and flowers of cannabis sativa linn Family: cannabinaceae.	Cannabiol , cannadiol terpene.	Treatment of pain , insomnia, asthma ,depression
20.capsicumfrute ceus	It obtained from fresh fruits and flowers of capsicum minimum or capsicum annus Family: solanaceae	Oleic acid , carotenoids, Ascorbic acid.	Nerve pain and other pain conditions.
21.carica papaya	It obtained from fresh fruits and flowers of carica papaya Family: caricaceae	Papain, CARPAIN	Nerve conditions

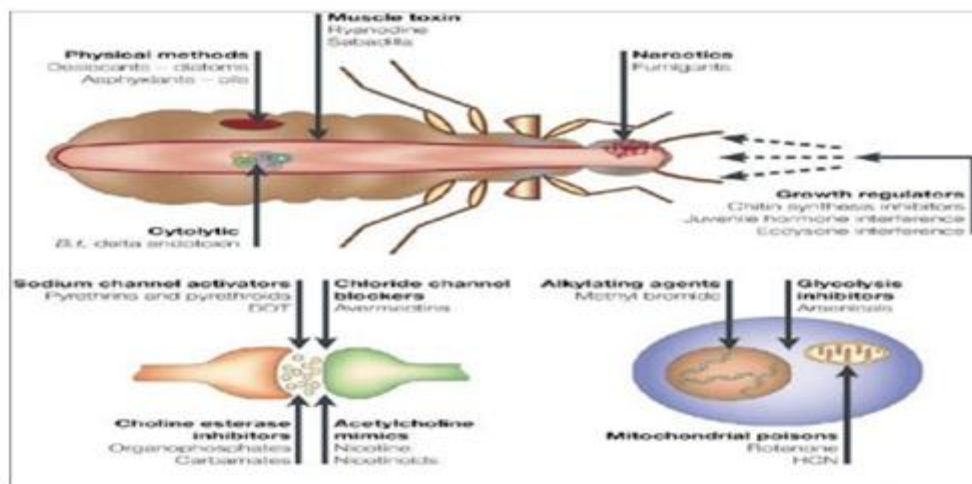
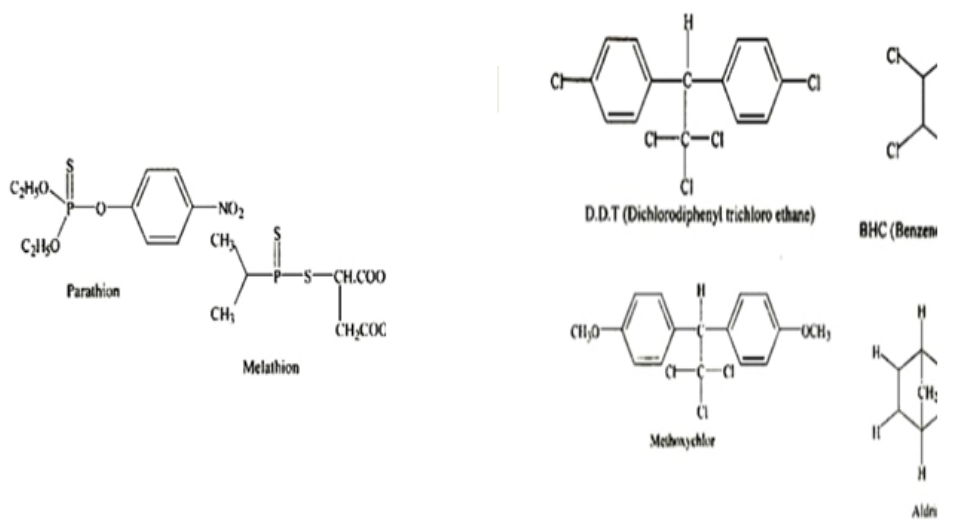


Figure 1.5 mechanism action of natural pesticides on

GENERAL MECHANISM OF ACTION OF NATURAL PESTICIDES:

It acts by 3 broad categories I.e.

1. **Stomach poisons:** kill by being taken into stomach. It is absorbed in the blood and leads to death of the pest due to the toxic action.
2. **Contact insecticides:** kill by direct or indirect contact with the insect or sometimes it penetrates inside the body and causes oxidation and suffocates the insect.
3. **Fumigants:** It can be applied only in enclosed areas where it surrounds the insect. Enters their breathing pores and kills. ⁽⁹⁾

METHODS TO CONTROL PESTS:

1. **A healthy soil:** A soil managed using organic methods will give plants a balanced food

supply. Plants which are fed well, will be much more resistance to pests and diseases. For caring for the soil important. Caring for the soil includes providing a regular input of organic pests in the form of animal manure and plant remains .The aim is to

- a) Maintain level of humus that gives structure of soil.
- b) Feed organism which live in the soil.
- c) Provides nutrient for plants.

A plant may look healthy, but because of the high content of nitrogen given by the fertilizers causing fast sap growth to attract the pests.

2. **A healthy crop:** By giving plants the right growing conditions they will be more able to

resist pest and diseases. The right choice of crop will help to deter pests and diseases.

A crop growing in an area where plants will only yield well and resist pests and diseases if they are grown under the most suitable conditions for that particular plant. To help ensure a healthy crop, weeding should be done early and regularly to stop weeds from taking nutrients which should be going to the crop.

- 3. Resistant varieties:** within a single crop there can be many differences between plants. Some will be tall; some may be able to resist particular disease.
- 4. Crop rotation:** It also helps a variety of natural predators to survive on the land. Grass, clover, a legume plant where a green manure, which is a plant grown mainly for the benefit of the soil is grown.
- 5. Good hygiene:** This can be done by composting the debris. This will kill the pests and diseases and produce compost which is a good soil improver and fertilizer.
- 6. Soil tillage:** ploughing can also push the pest deep down into the ground where they will be not able to survive. Ploughing and distributing the soil should be carefully considered against the harmful effects. Destroying the structure of soil and causes soil erosion.
- 7. Soil pH:** PH of the soil can affect some diseases. Changing the PH of the soil e.g. CLUBROOT.
- 8. Timely sowing:** This is often the young of many small pests rather than the adults and that causes the growth of pests.

Companion planting, Plants to treat predators, Barriers, Traps, Light traps, fly traps, Hand picking, Biological control are the other methods [11,19]

SIGNIFICANT PUBLIC HEALTH PROBLEMS THAT ARE CAUSED BY PESTS:

1. Vector borne diseases
2. Asthma and allergies
3. Microbial contamination
4. Avian flu
5. Prions
6. Anthrax

1. Vector borne diseases:

Infectious diseases like West Nile virus, Lyme diseases and RABBIT can be carried out by spread vector species such as mosquitoes, mites, rodents.

2. Asthma and allergies:

Indoor household pests such as cockroach can contribute to asthma and allergies. EPA also provides information to the public about safety using these products in schools and homes.

3. Microbial contamination: various microorganisms including bacteria, virus, protozoa, can cause microbial contamination in hospitals, public health care clinics, food processing facilities.

4. Avian flu: sometimes also known as bird flu. This occurs naturally or infections caused by virus can occur in humans. But the risk is generally low for people. It mostly acts by antimicrobial activity. These products are used by the poultry industry to disinfect their facilities.

5. Prions: certain proteins in cells central nervous systems of plants and animals may exist in infectious, abnormal forms known as prions. EPA determined that prions are considered to be a pest under FIFRA, and the products used to control prions, which are subjected to EPA regulation.

6. Anthrax: Biological sources such as bacillus ANTHRACIS, spores can cause a threat to public health and national security. EPA has the authority to issue emergency exemptions for pesticides for use in anthrax spores in decontamination efforts. [12, 16]

ADVANTAGES:

- They are cheap
- They are less harmful to human beings and more effective against pest.
- They are more stable and can be kept for a prolonged period
- Degradation is less.
- They can be used to control the carriers of vector borne diseases like malarial, sleeping sickness. [13]

DISADVANTAGES:

- The onset of action is slow. The quantity of pesticides required may be more due to crude components. [13]

PRECAUTIONS TO USE OF PESTICIDES:

- Use protective clothing via hand gloves, face masks, cap, apron, full trousers etc.
- Protecting nose, eyes, ears, hands from spray solution.

- The containers containing pesticides should be stored in a dry and cool place away from food and fodder.
- While spraying in open fields the direction of the wind should be kept in mind.
- After spraying pesticides, the operators should wash their hands and face.
- The clothes worn by them during operations should be washed properly.
- The various containers such as buckets used for mixing pesticides should be washed properly after operation.
- Persons handling pesticides with their skin and inhalation of vapours.
- Always use clean water.^[14]

II. CONCLUSION:

The study of natural pesticides that ensures safety, efficacy and good quality of products provides better nutrition for life. Natural pesticides based on farming and natural control Improves productivity and more stable with nontoxic mechanisms .Numerous factors have increased the interest of the pesticide industry and the pesticides market in this source of natural products as pesticides these include diminishing returns with traditional pesticides discovery methods, environmental and toxicological concerns with synthetic pesticides, and the high level of reliance of modern agriculture on pesticides. The number of options that must be considered in discovery and development of a natural product as a pesticide is larger than for a synthetic pesticide. However advances in chemical and biotechnology are increasing the speed of and ease with which man can discover and develops secondary compounds of plants as pesticides. These are most effective and convenient use for management of diseased plants.

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