

# PRODUCTION OF ORGANIC INSECTICIDE FROM NEEM (ALZADIRACHTA INDICA) LEAVES

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## **Abstract:**

Research into the insecticidal effects of organic compound, a limonoid from the margosa (*Azadirachta indica*) has been current for a few thirty years. Its sturdy antifeedant, insect growth Regulatory and fruitful effects area unit currently well understood and documented. Antifeedancy Varies markedly between species with mosquitoes being notably sensitive to organic compound. The mode of action of organic compound lies in effects on deterrent and alternative chemoreceptors resulting in associate degreetifeedancy and direct effects on most alternative tissues studied leading to an overall loss of fitness of the insect. The complexness of the molecular structure of organic compound has precluded its synthesis for chemical use though novel synthesis of the parent molecule is currently almost complete and analysis into easier mimetic substances is current. Applied analysis has concentrated on a range of natural formulations from seed kernels that contain *Azadirachta* in conjunction with many structurally connected molecules. This study brings the reader up thus far with each pure and applied analysis within the field, and provides an in depth summary of present thinking into the mode of action of organic compound. Where attainable comparative approaches are created between species of the consequences of pure organic compound and areas for future analysis area unit indicated.

**Index Terms** - organic compound indica, *Azadirachta indica* leaves, Limonoid, triterpense, persecutor control, Antifeedancy, Reproduction, Beta-sitosterol Mode of action.

## **I. INTRODUCTION**

In developing countries, the losses of crops as a result of persecutor, disease and competition from weeds is nice. In households, persecutor and insects like mosquitoes, cockroaches, mice etc create risks like the destruction of article of furniture, covering and to the feat of varied diseases, most seriously; protozoal infection. Pesticides/insecticides created to kill these pests so as to stop these damages, conjointly tend to possess adverse effects on humans in numerous ways in which, above all those created from artificial materials. These adverse effects of headache, dizziness, redness and different factors create this subject price work. The pesticides vary from agricultural to unit pesticides. Each class has its own impact, each on the targeted pest/insect and therefore the atmosphere within which it lives. This analysis targets insect powder created from natural product and therefore they have to be compelled to select these pesticides instead of those of artificial origin [1]. The *Azadirachta indica* is drought resistant and thrives commonly in areas with sub-arid to sub-humid conditions, with Associate in nursing annual rain between 500-1400mm. margosa may be a life giving tree, particularly for the dry coastal, southern districts. [2] Its been ascertained that the varied healthful values of margosa area unit its constituent phytochemicals gift. The seed kernels of margosa yield concerning ninetieth of a set oil comprised primarily of glycerides. The yellow, bitter oil encompasses a garlic-like odor and contains or so a pair of of bitter principles as well as nimbidin, nimbrin, nimbinin, nimbidol and different connected minor limonoid triterpense [Windholz, 1987] [3]. All components of the tree yield beta-sitosterol. *Azadirachtin* is the most advanced secondary substance gift within the plant. The mangos may be a bitter tonic herb that reduces inflammation and clears toxins, whereas promoting healing and rising all body functions. Aside from this, it has parasitic, insecticidal preventive properties and thence destroys a good vary of organisms consistent with [Dixit 1988] [4].

## **II. MATERIALS AND METHODS**

### **➤ Study area**

The research was conducted in the University of Cape Coast, Cape Coast, Ghana, West Africa. The samples of the neem leaves were obtained from Apewosika, Kokoado and Amamoma; communities around the University of Cape Coast

campus. The plant was identified according to the description by Felter and Lloyd [1898 [5] and later authenticated by comparing with voucher specimens at the herbarium section of the University of Cape Coast.

#### ➤ Preparation of the insecticide

A weighed quantity of dried Neem leaves was blended into powder with a blender to obtain a homogeneous mixture. The dried Neem powder was used for making the insecticide while the fresh blended leaves were used for the extraction. 10.00g of the powdered Neem leaves sample was weighed into a 200ml beaker. 5.0g of a binding material (starch) was weighed and added to the Neem sample in the beaker. The mixture was stirred to obtain a homogeneous mixture. 5.0ml of distilled water was added gradually to the mixture in quantity of 1.0ml while stirring [6]. The cleaned weighed beaker ( $M1$ ) was filled with the mixture and the weight taken ( $M2$ ). To obtain the true weight of the prepared mixture ( $M$ ), the difference between the weights  $M2$  and  $M1$  was computed as  $M$ . thus  $M = M2 - M1$  The beaker with the wet insecticide mixture was dried in an oven at a regulated temperature range of 30o-40oC. The sample was weighed after every 10 minutes until a constant dried weight was obtained after 30minutes. The beaker with the dried insecticide was weighed to obtain the accurate weight by deducting from that of  $M$ .

#### ➤ Statistical analysis

Data were analyzed statistically using student's t-test. The results were expressed at the mean ( $\pm$ ) S.D. the significance of the differences between control and the test groups were determined by the student's t-test and the values of  $P < 0.05$  were taken to be statistical significant [Parker, 1979] [7]. The stat graphics software was employed in the analysis of the data.

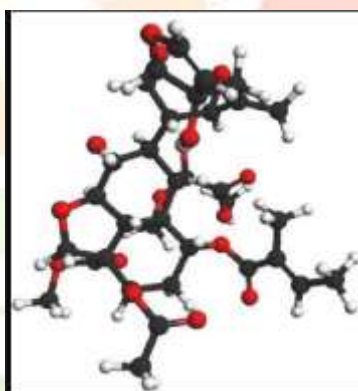


Fig 1: Chemical Structure of Azadirachta indica

### III. RESULTS AND DISCUSSION

#### ➤ Results for Application of the Prepared Insecticide

The prepared Neem insecticide was distributed among households within the study area and they were educated on how to use them. The households used them and were closely monitored for the effectiveness. They applied the insecticide in the evening in the comfort of their homes. The results were obtained based on the following:

- Time of application.
- Number of bites received before, during and after bites period.
- Adverse effects suffered.
- Efficiency Rate = total number of bites received before application / Total number of bites received after application.
- %Efficiency = (Efficiency rate / Total number of bites received before application) x 100%
- Tables 1 and 2 below shows the efficiency rate of the insecticide with respect to the time of application.

Table 1: Bites Received before Application of Insecticide

Time/ hour	Users					Total
	A	B	C	D	E	
1	2	4	4	3	4	17

2	4	3	5	3	3	18
3	4	3	4	5	4	20
4	6	5	5	6	4	26

**Table 2:** Bites received moments after Application

Time/hr	Users					Total	Rate of efficiency	% efficiency
	A	B	C	D	E			
1	0	0	0	0	0	0	17	1
2	0	0	0	0	0	0	18	1
3	1	1	0	1	0	3	17	7
4	2	1	0	1	0	4	22	8

- The users, A, B, C, D and E are the households which were randomly selected in the study area. Questionnaires were also issued to students and the general public to assess their views on the adverse effects they usually experience upon exposure to insecticides. Common effects suffered by most people include headache, irritation, and catarrh. Others also specified other effects such as dizziness, breathing problems especially asthmatic patients. To those who could not read the content of the questionnaire, they were helped through our interviews. The results obtained are tabulated below.

**Table 3:** The Adverse Effect of Using Synthetic Insecticide

Effects	Number of complaints
Catarrh	11
Dizziness	8
Headache	9
Irritation	13

**Table 4:** The Adverse Effect of Using the Prepared Insecticide

Effects	Number of complaints
Catarrh	1
Dizziness	0
Headache	2
Irritation	1

**Table 5:** Effects of Prepared Insecticide

Household	Heat	Smoke	Odor	Effectiveness
A	Normal	Normal	Unpleasant	Positive
B	Normal	Normal	Unpleasant	Positive
C	Normal	Not mush	Unpleasant	Positive
D	Normal	little	Unpleasant	Positive

#### IV. DISCUSSION

From the results on the applied mathematics tables, it absolutely was ascertained that bites were recorded [1] Associate in Nursing hour when application of the insect powder. Yet, Associate in Nursing hour later, no dipteran bites were recorded resulting in Associate in Nursing potency of 100 percent. Associate in Nursing hour and [1] and even 2 hours later, solely a few bites were recorded resulting in Associate in Nursing potency of eighty four.5%-85%. this can be seen within the form administered. Also the results collated from the questionnaires and also the interviews showed that in each cases (synthetic and sample prepared), the users

complained of headache, catarrh, giddiness and irritation of the attention. It however, showed that the damaging result of artificial insect powder was severe compared to the ready sample. fourteen cases were reported for irritation, twelve cases for inflammation, ten cases for headache and eight cases for giddiness from the utilization of the artificial insect powder whereas a pair of cases for irritation, a pair of cases for inflammation, no cases for headache and one case for giddiness were reported for the ready sample. In general no adverse effects were reported from the utilization of the ready sample. The ready insect powder burn and smoke effectively pro re nata and square measure non-toxic and non-allergic to humans. Environmentally, the assembly method is over ninetieth pollution free and doesn't involve any well-known chemical reactions. The raw materials for the assembly square measure entirely natural product.

## V. CONCLUSION

The analysis has shown that pesticides made up of natural biology supply like Azadirachta indica leaves for dipteran destruction square measure less ototoxic as compared to those from the artificial origin thus it's safer to use pesticides ready from natural raw materials since they need very little or no adverse effects on human health.

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