

Plant Cleaner

The Green Solutions to

Plant Pests and Diseases Control

SHE-PLANT



INTRODUCTION OF SHE-PLANT

Pesticides present risks to human health. Exposure of human to pesticide whether through inhalation, ingestion, skin contact and transdermal absorption will have some direct risk to human health through residual toxicity. In addition, many pesticides also present indirect risks to human health in the form of environmental pollution such as halide-substituted organics which accumulate in the fat stores of fish and other animals. These problems led the complete bans on the use of some pesticides such as DDT, chlordane, heptachlor, aldrin and dieldrin. Besides that, continued use of pesticide also increases the development of widespread resistant of insects to pesticides.

Shemical International (USA) LLC. takes the challenge of totally new approach to control insects and diseases effecting plant without destroying human health and the environment. It is a quick acting, effective, residually non toxic and biodegradable for combating insects, bacteria, virus and fungi which may be used as a replacement for traditional pesticide treatments.

Plant Cleaner of SHE-Plant is effective in eliminating and controlling the following insects and diseases:

Algae Fusarium	Alternaria	Rust
Gray Mold	Anthraxnose	Sawfly
Leaf Miner	Aphids	Scab
Leaf Hoppers	Bacterial Spot	Scales
Mealy Bugs	Blight	Sooty Mold
Mites	Botrytis	Spiders
Moisquito	Canker	Thrips
Pear Psylla	Cercospora	Tomato Curl Virus
Phytophthora	Chinch Bugs	Volutella fungus
Powdery Mildew	Dieback	Whitefly
Pseudomonas	Downey Mildew	Wooly Adelgid
Pythium	Fire Ants	
Rhizoctonia	Rice Blast	

Product Description

Plant Cleaner of SHE-Plant is a 100% pure special plant based formulation based on Safety, Health and Environment Friendly ingredients. It doesn't use any toxic chemicals, inert ingredients, halogenated hydrocarbon, enzymes, oils, animal fatty acids, aliphatic and aromatic hydrocarbon toxic solvents, CFC and ozone depleting substances. The main ingredients are ***Nano Alpha 10, nano silver supplement and food grade additives.***

Directions

Normal dilution:

	SHE-Plant	:	Water
Soft Protective Shell Insects:	1 part	:	250 parts
Algae, fungus & bactericide	1 part	:	400-500 parts

Coverage

Soft Protective Shell Insects: 200-250 liters/acre or 500-625 liters/hectare

Algae, fungus & bactericide: 400-450 liters/acre or 1,000-1,125 liters/hectare

The spraying of SHE-Plant should be once a week. If the plants are seriously infected with insects, algae, fungus and bactericide, spraying is recommended for 5 days for a month.

Recommended Sprayers



Portable Mister
(Highly Recommended)



Motorized Backpack Sprayer
(Recommended)



Manual Backpack Sprayer
(Fairly Recommended)



Manual Sprayer
(Not Recommended)

Acute Toxicity Test of Nano Alpha 10

Test Method: OECD Guideline for Testing of Chemicals Method 203 Fish

Result: Not hazardous to the aquatic environment.



Pusat Teknologi Alam Sekitar dan Bioproses Environment and Bioprocess Technology Centre

Bangunan 15, SIRIM Berhad, Shah Alam, Selangor Darul Ehsan.
Tel : 60-3-5544 6550 / 6598 Faks : 60-3-5544 6590



RESULTS SUMMARY

Company Name : Shemical International Sdn Bhd

Address : Lot 109A, Jalan Gebeng 1/6,
Kaw. Perindustrian Gebeng
26080 Kuantan, Pahang
(Attn : Mr. Ng)

Request : 96-hour Fish (Tilapia), Acute Toxicity Test of Nano Alpha 10

Your Ref No.	
SIRIM Ref. No.	237/16/712
Job No.	J026/08
Report No.	R054/08
Date of Issue	17/03/08
No. of pages	11

SAMPLE DESCRIPTION

One liquid sample coded as "Nano Alpha 10" was received on 01 Feb 2008.

TEST METHOD

(1) *Fish acute toxicity test according to OECD Guidelines for Testing of Chemicals - Method 203 Fish, Acute Toxicity Test

RESULT:

Sample Code	Appearance	LC ₅₀ (96 hour) (v/v)
Nano Alpha 10	Brownish	880 mg/L (0.088%)

Note: Refer to Appendix A – R054-1/08 for details.

INFERENCE

The classification system for substances hazardous to the aquatic environment according to The Globally Harmonised System (GHS) of Classification and Labeling of Chemicals (2005) is shown below.

Toxicity Category (Acute toxicity for 96 hr LC ₅₀ for crustacea)	Classification Limit
Acute I	≤ 1 mg/l
Acute II	> 1 - ≤ 10 mg/l
Acute III	> 10 - ≤ 100 mg/l

Based on the criteria for the harmonized classification system for substances, the "Alpha Nano 10" is classified as "Not hazardous to the aquatic environment" as the LC₅₀ value is above 100 mg/l.

(The inferences expressed herein are outside the scope of accreditation)

Name: **Tan Yong Nee**
Designation: **Researcher**
Fax No: **03-55446590**
Tel. No: **03-55446591**

SIRIM Berhad
(No. Syarikat 307474 - V)
1, Persiaran Dato' Menteri
Seksyen 2, Peti Surat 7035
40911 Shah Alam
MALAYSIA
Tel: 60-3-5544 6000
Hotline: 60-3-5510 3535
Faks: 60-3-5510 8095
Website: www.sirim.my

The results contained in this report relate only to samples / items received and analysed by SIRIM Environment and Bioprocess Technology Centre. This report shall not be reproduced in any form without the written approval of SIRIM Berhad.



Biodegradability Test of Nano Alpha 10

Test Method: Reference to International Standard ISO 10707:1994(E)

Result: Reach 96% of degradation at day 28 and it is readily biodegradable.

TEST REPORT: S08CHM01431-01-THY-CORR02
19 MAR 2008

Date: 19 MAR 2008 Tel: +65 68851291 Fax: +65 67784301
Client's Ref: QM-0108-107Rev2 Email: Huayi.CHEN@tuv-sud-psb.sg

Note: This report is issued subject to TÜV SÜD PSB's "Terms and Conditions Governing Technical Services".
The terms and conditions governing the issue of this report are set out as attached within this report.

SUBJECT
Analysis of SHEMICAL NANO ALPHA 10

CLIENT
SHEMICAL International Sdn Bhd
C/O East Coast Technology Park
Lot 106A, Jin Gebeng 1/0
Kawasan Perindustrian Gebeng
26080 Kuantan,
Pahang Darul Makmur
Malaysia
Attn: Ng Kee Wee

SAMPLE SUBMISSION DATE
31 Jan 2008

DESCRIPTION OF SAMPLE
One sample of SHEMICAL Solution was received.
1) SHEMICAL Nano Alpha 10

METHOD OF TEST
1) Reference to International Standard ISO 10707:1994(E)
Evaluation in an aqueous medium of the "ultimate" aerobic biodegradability of organic compounds – Method by analysis of Biochemical Oxygen Demand (Closed bottle test).

PSB TEST
TUV SUD PSB Pte. Ltd.
Testing Services
No 1 Science Park Drive
Singapore 118221

Phone: +65 6885 1333
Fax: +65 6778 8870
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg: 198003607R

Regional Head Office:
TUV SUD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-01/02
The Franklin, Singapore 118223
TUV

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TEST REPORT: S08CHM01431-01A-THY-CORR01
19 MAR 2008

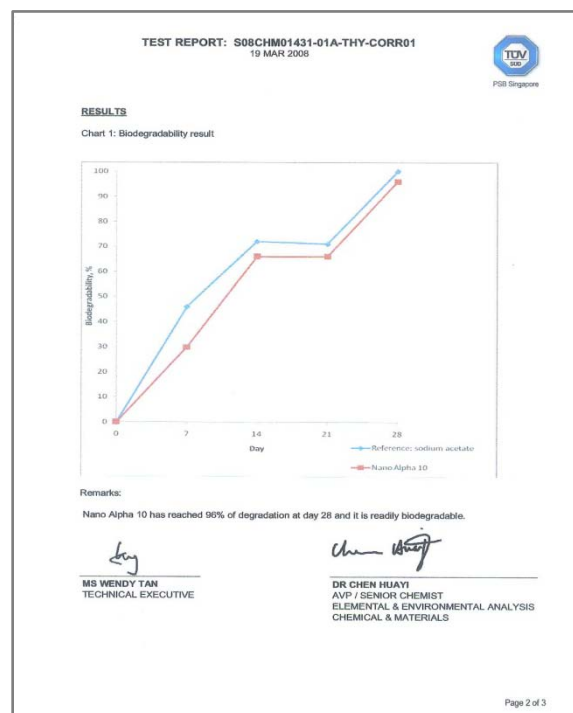
PSB Singapore

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January 2008

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International Standard ISO 10707:1994(E)

Evaluation in an aqueous medium of the
“ultimate” aerobic biodegradability
of organic compounds –

Method by analysis of
Biochemical Oxygen Demand
(Closed bottle test)

OUR TECHNOLOGY

Colloidal Silver vs. Bacteria infection in Plants

Catalytic Oxidation:

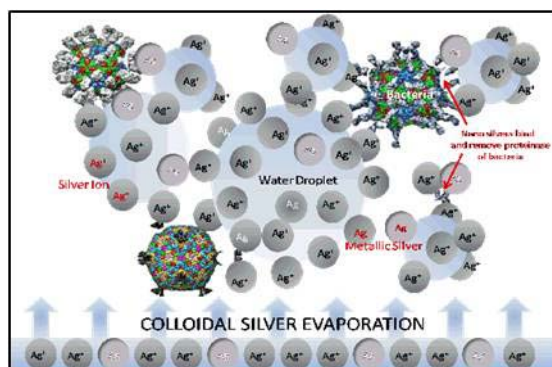
Silver, in its atomic state, has the capacity to absorb oxygen and act as a catalyst to bring about oxidation. Atomic (nascent) oxygen absorbed onto the surface of silver ions in solution will readily react with the sulfhydryl (-S-H) groups surrounding the surface of bacteria or viruses to remove the hydrogen atoms (as water), causing the sulfur atoms to form an R-S-S-R bond; blocking respiration and causing the bacteria to expire. Employing a simple catalytic reduction or oxidation reaction, colloidal silver will react with any negative charge presented by the organism's transport or membrane proteins and deactivate them.

Reaction with Bacterial Cell Membranes:

There is evidence that silver ions attach to membrane surface radicals of bacteria, impairing cell respiration and blocking its energy transfer system. One explanation is based on the nature of enzyme construction: Specific enzymes are required for a given biochemical activity to take place. Enzyme molecules usually require a specific metallic atom as part of the molecular matrix in order to function. A metal of higher valance can replace a metal of lower valance in the enzyme complex, preventing the enzyme from functioning normally. Silver, with a valance of plus 2, can replace many metals with a lower, or equal valance that exhibit weaker atomic bonding properties.

Binding with DNA:

Studies by C.L. Fox and S.M. Modak with *Pseudomonas aeruginosa*, a tenacious bacteria that is difficult to treat, demonstrated that as much as 12% of silver is taken up by the organism's DNA. While it remains unclear exactly how the silver binds to the DNA without destroying the hydrogen bonds holding the lattice together, it nevertheless prevents the DNA from unwinding, an essential step for cellular replication to occur.



Nano Biotech Colloidal Micelles (NBCM)

SHEMICAL combines the knowledge of nanotechnology and biotechnology in using the unique colloidal chemistry to generate a state of the art formulation that produces the innovative Nano Biotech Colloidal Micelles (NBCM). NBCM are mild but are amazingly powerful colloidal micelles made from non-toxic plant based extracts, plant derivatives and biodegradable surfactants.

NBCM are very fine molecules with spherical aggregate structure which remain in suspension indefinitely and are not affected by gravity when dispersed in a liquid colloid. It is surrounded by a cloud of tightly bound ions. The NBCM aggregates form in order to minimize the free energy of the solution. They are dynamic but equilibrium structures and able to rearrange in response to changing environmental conditions. They also undergo thermal fluctuations and Brownian motion. It works well with hard, soft, cold, hot, fresh and salt water.

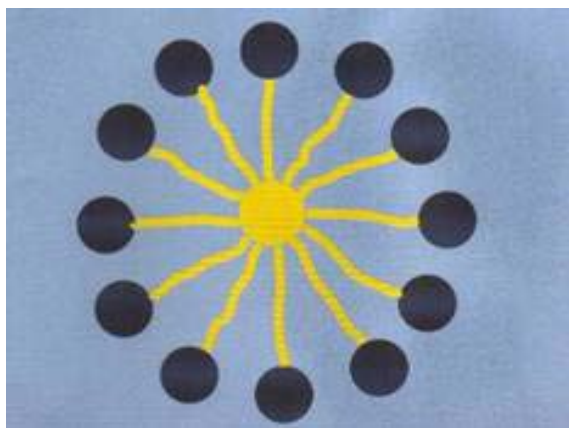


Illustration of Nano Biotech Colloidal Micelles.

The hydrophobic poles attract to each other forming interior micelles cluster and the hydrophilic poles form a powerful outer surface.

NBCM in colloidal chemistry can be explained as a sub-division of physical chemistry comprising of the phenomena characteristic of matter when one or more of its dimension lie in the range between 1 nanometer and 100 nanometer. In this nature of science, the dimension of NBCM are more important than the nature of the material. In the size range of nanometer, the surface area of NBCM are much greater than its volume that unusual phenomena of colloidal micelles will occur as following:

- a. They do not settle out of the suspension of gravity.
- b. They will be small enough to pass through the unreachable exterior areas of the plants.
- c. They will move in at least one dimension randomly.
- d. They have the velocity that will move endlessly without stopping.
- e. They will injure and kill insects through breaking down waxy parts of the insects.

- f. They will have tremendous wetting capacity.
- g. They will reduce the surface tension in water or water solutions.
- h. They will have sterilizing effect by disrupting the DNA or RNA of the virus, prokaryotic cell of bacteria, and eukaryotic cell of algae, protozoa and fungi.

NBCM Aspects of Disinfectants in SHE-Plant

Cell Structure and Function related to Disinfectants

All cells have plasma membranes, genetic material (DNA) and cytoplasm. There are two general types of cells which prokaryotic cell and eukaryotic cell. It is therefore important to know the differences between prokaryotic and eukaryotic cells. By understanding the structures and functions of the cells will enable us to control and destroy disease causing bacteria without harming our own cells.

I. Prokaryotic cell structure

a. Glycocalyx

It is a gelatinous sticky substance at the outer layer of the cell that protects the cell from drying out. It helps the cell to stick to the surface of the proper environment for growth. It also provides protection against phagocytosis.

b. Outer Membrane

It is composed of bilayer membrane normally found in gram negative bacteria. The inner layer is composed of phospholipids that channel proteins called porins. Porins are small pores or channels that allowed molecules to diffuse in through the outer membrane. The outer layer is composed of lipopolysaccharide (LPS) which is a union of lipid with sugar. LPS is partly hydrophobic and hydrophilic. It is mainly used as protection from toxic compounds such as antibiotics which are too large to go through the porins.

c. Cell Wall

This structure is only found in eubacteria. The main component is peptidoglycan which is composed of long chains of polysaccharides (glycan) crosslinked by short proteins (peptides). When it is linked together it will create a single rigid molecule structure like a chain link fence. The cell wall is very porous and does not regulate the transport of substances into the cell. It's function is to hold the cell shape and withstanding the turgor pressure. Turgor pressure is the internal pressure in the cell's content.

d. Cell Membrane

The major functions of the membrane are to contain cytoplasm and to control the passage of the substances into and out of the cell. It contains of membrane lipids and membrane proteins.

Membrane lipid is composed of a phospholipid bilayer which is hydrophobic fatty acid tails and hydrophilic phosphate heads.

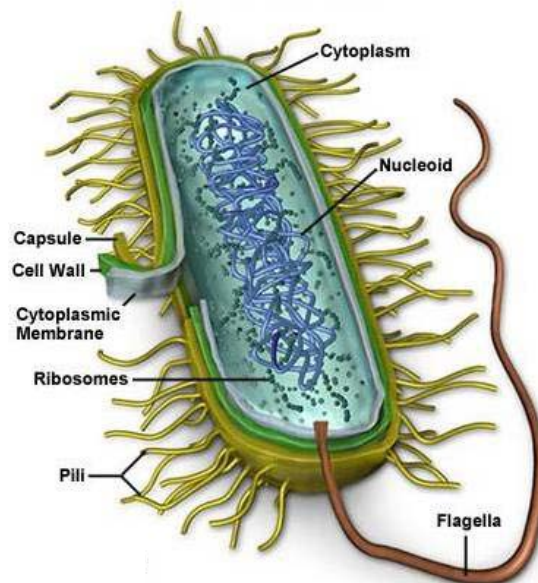
Membrane proteins are composed of integral proteins and peripheral proteins. Integral proteins are involved in transport and peripheral proteins are involved in electron transport chain and/or photosynthesis.

e. Cytoplasm

It is a matrix that composed of water (90%) and proteins. It contains the nucleoid, ribosomes and endopores.

1. Nucleoid - It is a mass of DNA and not surrounded by a membrane.
2. Ribosomes - It is the site of protein synthesis. Prokaryotic ribosomes are smaller than eukaryotic ribosomes.
3. Endospores - It is hardy non resting structures that some bacteria especially G(+), produce through the process of sporugation.

TYPICAL PROKARYOTIC CELL



Prokaryotes are organism without cell nucleus or indeed a membrane bound organelles where in most cases unicellular (in rare cases, multicellular). Prokaryotes are divided into two groups which are Bacteria and Archaea (originally Eubacteria and Archaeabacteria) because of their significant genetic differences between the two. All prokaryotic cells have a cell wall with its primary component being peptidoglycan and about 10 to 100 times smaller than eukaryotic cells.

II. Eukaryotic Cell Structure

a. Cell Wall

Eukaryotic cell walls are mainly composed of various polysaccharides, but not the peptidoglycan seen in the walls of prokaryotic cell walls.

Animal cells – no cell walls

Plant cells – made of cellulose

Fungi – made of cellulose only or combination with chitin

Algae – made of cellulose

Protozoans – no cell wall

b. Glycocalyx

A glycocalyx may exist outside the plasma membrane. It composed of carbohydrate chains from glycoproteins in cell membrane.

c. Plasma Membrane

The difference between the prokaryotes and eukaryotes are that proteins involved in electron transport chain and photosynthesis are not found in cell membrane but are found in cytoplasmic organelles, and cell membrane contains cholesterol.

d. Cytoskeleton

It is not found in prokaryotes and contains a network of filamentous and tubules structures. It acts to anchor organelles, functions in cytoplasmic streaming and in movement of organelles within the cytosol, enables contraction of cell, move the cell membrane during endocytosis and amoeboid action, and provides the basic shape of the cell.

e. Nucleus

It is surrounded by double membrane with nuclear pores. It contains chromosomes which is a genetic material composed of DNA and in linear form. It's function is to exert a continuing influence over the import and export of substances through the envelope, and isolates the DNA in eukaryotic cells.

f. Ribosomes

It's structure is not membrane bound and is made up of RNA and protein. It is the sites of protein synthesis.

g. Endoplasmic Reticulum (E.R.)

ER traverses the cytoplasm of eukaryotic cells. It's function is as a transport system which is in two forms: smooth endoplasmic reticulum (SER) and rough endoplasmic reticulum (RER). SER with no ribosomes attached is the main site for lipid synthesis. RER with ribosomes attached functions in the initial modification of proteins.

h. Golgi Body

It has the structure of 4 to 8 flattened membrane bound sacs loosely stacked on top of one another surrounded by vesicles. This is the place of final modification of protein and lipids.

i. Vesicles

It is a membrane bound sacs that could be pinched off pieces of golgi body, E.R., or cell membrane.

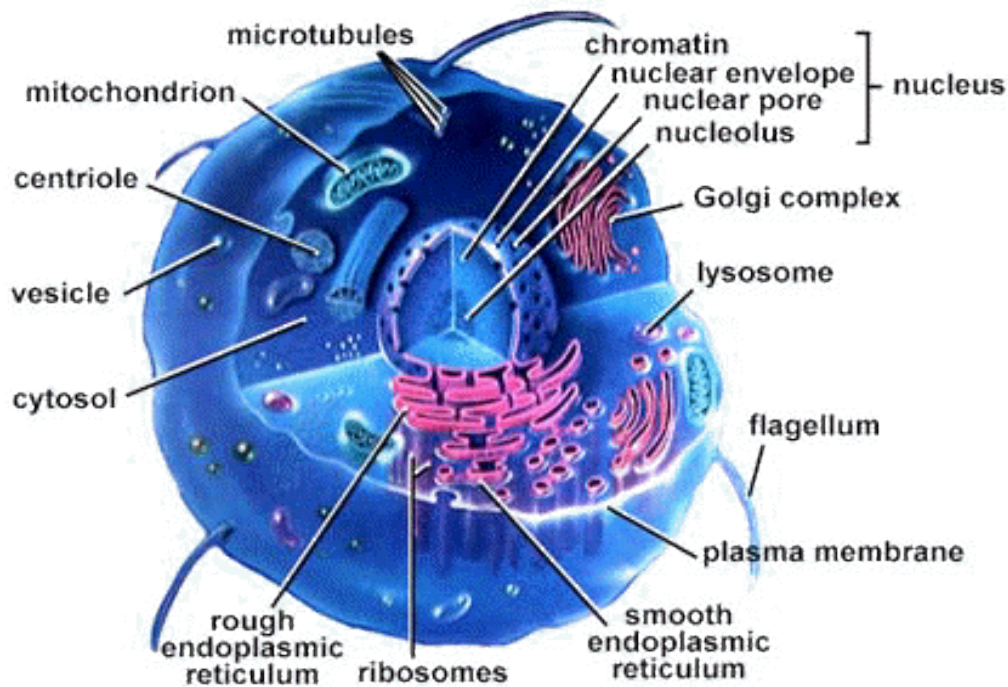
j. Mitochondrion

It has the structure of oval shaped and double membrane. It's function is to break down energy containing organic molecules and repackage the energy into smaller units (ATP) that can be used by the cells.

k. Centriole

It is a paired cylindrical structure called microtubules and microfilaments. It organizes a microtubule network called spindle fibers which are responsible for moving the chromosomes around in the cell during division.

TYPICAL EUKARYOTIC CELL



Eukaryotes have cells having membranes bound nucleus and membrane bound organelles. Besides the nuclear membrane, eukaryotes have numerous other internal membranes that compartmentalize cellular functions. Eukaryotic cells include fungi, algae, protozoa, plants, insects and animals. Eukaryotes are usually larger and more complex than prokaryotes.

How do NBCM destroy bacteria?

A cell wall protects bacteria cell from the effects of osmotic pressure. NBCM destroy the peptidoglycan layer of the bacteria cell walls, but not to human beings and animals which do not have cell wall. In the absence of unstable formed peptidoglycan, growing bacteria cells will be weakened and destroy through to the following exposures:

1. Inhibition of cell wall synthesis

Generally, a bacterium is in a hypotonic solution and water tries to move in to the bacterium from a higher water concentration to the lower water concentration. When the cells are less resistant to the effect of osmotic pressure; the underlying cytoplasmic membrane bulges through the weakened portions of cell wall as water moves into the cell, and eventually the lyses.

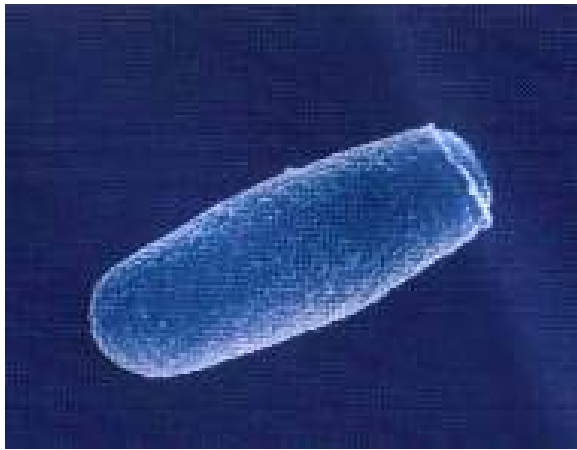
2. Inhibition of metabolic pathways

A damaged cell wall will affect all the chemical reactions in metabolism of the bacterium. The unstable metabolic pathways will result in unstable enzyme activity, temperature and pH in the cell.

3. Disruption of cytoplasmic membranes

The disruption of cytoplasmic membranes will severely damage the cytoplasm which is composed with primary 90% of water and proteins. The contents of cytoplasm such as nucleoid and ribosomes will be destroyed.

NBCM Aspects of Disinfectants in SHE-Plant



A scanning electron micrograph of bacteria cell before the inhibition of cell wall synthesis; inhibition of protein synthesis; and disruption of cytoplasmic membrane.



A scanning electron micrograph of bacteria cell bursts from osmotic pressure due to the integrity of peptidoglycan is not maintained. This is due to the followings:

- *Inhibition of cell wall synthesis where bacteria cell walls are destroyed, but not to animals which lack cell walls.*
- *Inhibition of metabolic pathways.*
- *Disruption of Cytoplasmic membranes.*

NBCM Aspects of Elimination of Insects in SHE-Plant

Insect Body Structure and Function related to Elimination of Insects

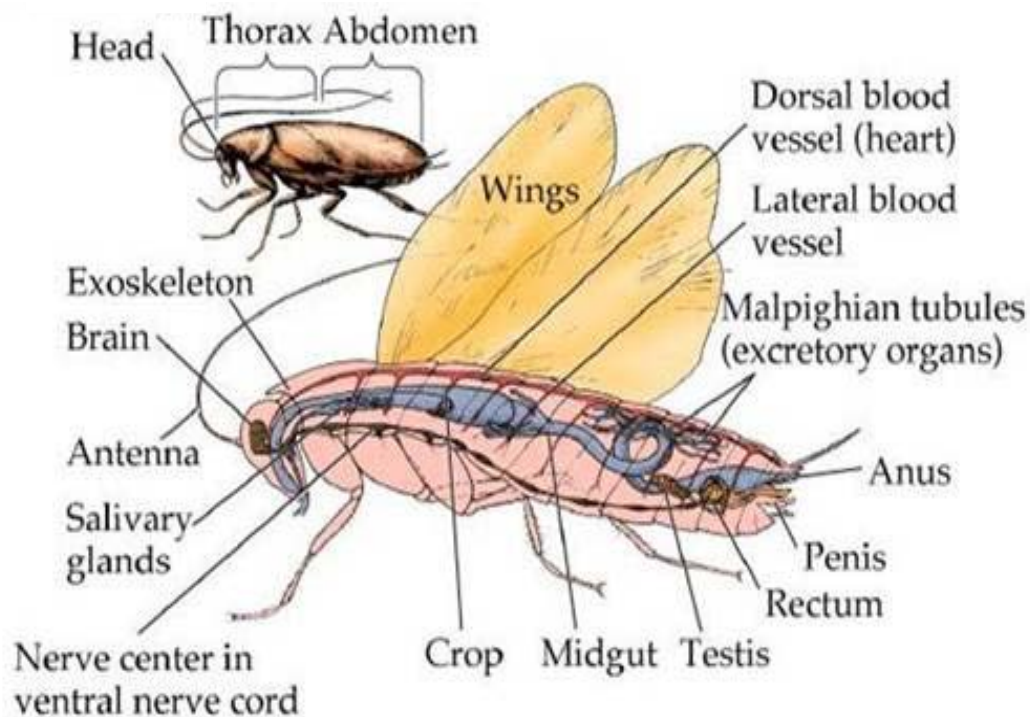
Insect Structure and Function

The arthropods are a large group of invertebrate animals which include insects, spiders, millipedes, centipedes and crustacea such as lobsters and crabs. All arthropods have a hard exoskeleton or cuticle, segmented bodies and jointed legs. The crustacea and insects also have antennae, compound eyes and, often, three distinct regions to their bodies: head, thorax and abdomen.

General Characteristics of Insects

The insects differ from the rest of the arthropods in having only three pairs of jointed legs on the thorax and, typically, two pairs of wings. There are a great many different species of insects and some, during evolution, have lost one pair of wings, as in the houseflies, crane flies and mosquitoes. Other parasitic species like the fleas have lost both pairs of wings. In beetles, grasshoppers and cockroaches, the first pair of wings has become modified to form a hard outer covering over the second pair.

Insect Structure



Cuticle and ecdysis

The value of the external cuticle is thought to lie mainly in reducing the loss from the body of water vapour through evaporation, but it also protects the animal from damage and bacterial invasion, maintains its shape and allows rapid locomotion. The cuticle imposes certain limitations in size, however, for if arthropods were to exceed the size of some of the larger crabs, the cuticle would become too heavy for the muscles to move the limbs.

Between the segments of the body and at the joints of the limbs and other appendages, the cuticle is flexible and allows movement. For the most part, however, the cuticle is rigid and prevents any increase in the size of the insect except during certain periods of its development when the insect sheds its cuticle (ecdysis) and increases its volume before the new cuticle has time to harden. Only the outermost layer of the cuticle is shed, the inner layers are digested by enzyme secreted from the epidermis and the fluid so produced is absorbed back into the body. Muscular contractions force the blood into the thorax, causing it to swell and so split the old cuticle along a predetermined line of weakness. The swallowing of air often accompanies ecdysis; assisting the splitting of the cuticle and keeping the body expanded while the new cuticle hardens. In insects, this moulting, or ecdysis, takes place only in the larval and pupal form and not in adults. In other words, mature insects do not grow.

This tracheal respiratory system is very different from the respiratory systems of the vertebrates, in which oxygen is absorbed by gills or lungs and conveyed in the blood stream to the tissues. In the insects, the oxygen diffuses through the trachea and tracheoles directly to the organ concerned. The carbon dioxide escapes through the same path although a proportion may diffuse from the body surface.

Breathing

Running through the bodies of all insects is a branching system of tubes, tracheae which contain air. They open to the outside by pores called spiracles and they conduct air from the atmosphere to all living regions of the body. The tracheae are lined with cuticle which is thickened in spiral bands. This thickening keeps the tracheae open against the internal pressure of body fluids. The spiracles, typically, open on the flanks of each segment of the body, but in some insects there are only one or two openings. The entrance to the spiracle is usually supplied with muscles which control its opening or closure.

Since the spiracles are one of the few areas of the body from which evaporation of water can occur, the closure of the spiracles when the insect is not active and therefore needs less oxygen, helps to conserve moisture. The tracheae branch repeatedly until they terminate in very fine tracheoles which invest or penetrate the tissues and organs inside the body. The walls of tracheae and tracheoles are permeable to gases, and oxygen is able to diffuse through them

to reach the living cells. As might be expected the supply of tracheoles is most dense in the region of very active muscle, e.g. the flight muscles in the thorax.

The movement of oxygen from the atmosphere, through the spiracles, up the tracheae and tracheoles to the tissues, and the passage of carbon dioxide in the opposite direction, can be accounted for by simple diffusion but in active adult insects there is often a ventilation process which exchanges up to 60 per cent of the air in the tracheal system. In many beetles, locusts, grasshoppers and cockroaches, the abdomen is slightly compressed vertically (dorso-ventrally) by contraction of internal muscles. In bees and wasps the abdomen is compressed rhythmically along its length, slightly telescoping the segments. In both cases, the consequent rise of blood pressure in the body cavity compresses the tracheae along their length (like a concertina) and expels air from them. When the muscles relax, the abdomen springs back into shape, the tracheae expand and draw in air. Thus, unlike mammals, the positive muscular action in breathing is that which results in expiration.

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Blood system

The tracheal supply carrying oxygen to the organs gives the circulatory system a rather different role in insects from that in vertebrates. Except where the tracheoles terminate at some distance from a cell, the blood has little need to carry dissolved oxygen and, with a few exceptions, it contains no haemoglobin or cells corresponding to red blood cells. There is a single dorsal vessel which propels blood forward and releases it into the body cavity, thus maintaining a sluggish circulation. Apart from this vessel, the blood is not confined in blood vessels but occupies the free space between the cuticle and the organs in the body cavity.

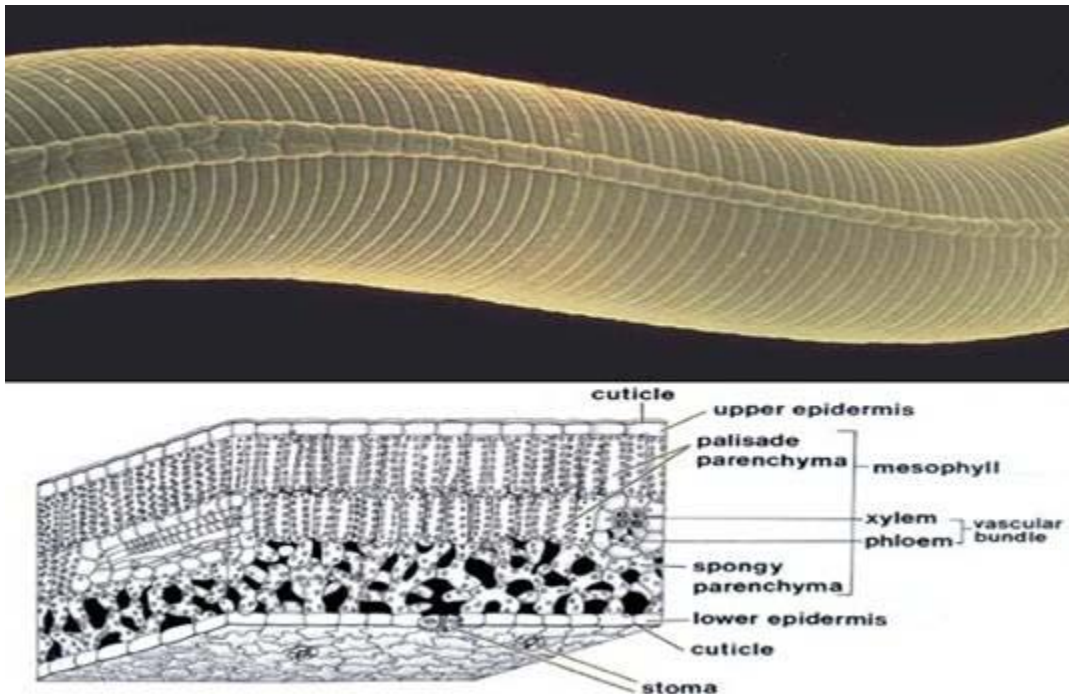
Exoskeleton

An insect's skeleton is on the outside of its body, and forms a hard protective shell. This is called exoskeleton. It is made out of a tough and solid substance called chitin which is both strong and light weight. Each insect's exoskeleton can contain chitin of different forms. Some is very rigid and forms thick solid structures and cutting edges of claws or mandibles. In other areas, the chitin can be thin and flexible.

Cuticle Structure

The cuticle is secreted in the form of thin layers by the apical microvilli of epidermal cells. The chitin microfibrils are embedded into the protein matrix and stabilize it in a way that resembles construction of steel reinforced concrete.

Cuticle Structure

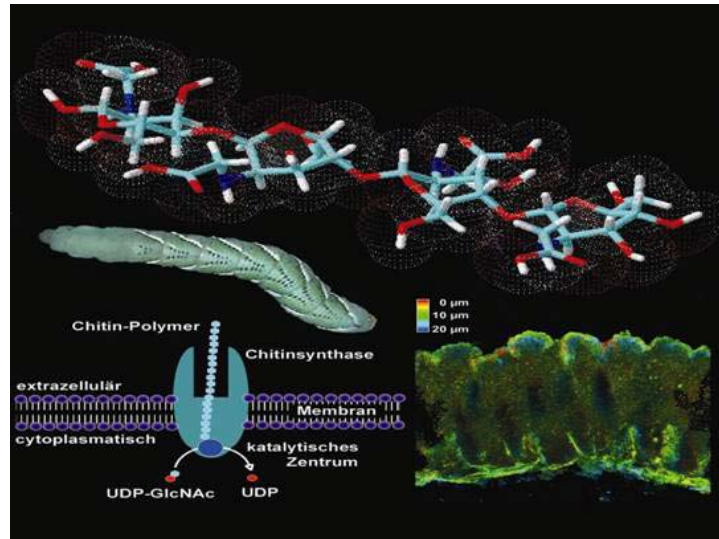


Chitin

Chitin is a major component of the insect cuticle. The chitin content constitutes up to 40% of the exuvial dry mass depending on the insect species and varies considerably with the different cuticle types even in a single organism. It functions as light but mechanically strong scaffold material and is always associated with cuticle proteins that mainly determine the mechanical properties of the cuticle.

Chitin is the most widespread amino polysaccharide in nature. It is mainly found in the insect's exoskeletons, fungal cell walls or nematode eggshells.

Chitin Structure



How do NBCM eliminate insects?

NBCM impacts the exoskeleton structure of the insects by disrupting the molecular structure of the chitin and other protein substances that protect the insect. Since chitin synthase has been localized in the membranes of Golgi complexes and intracellular vesicles, as well as plasma membranes, it may be concluded that NBCM may follow an exocytotic pathway, accumulating in cytoplasmic vesicles during its attack on the cell surface.

NBCM penetrate the cuticle of the insects and dissolve and disrupt the cell membranes and phytoplasm. This destroys the respiratory functions of the insects by disrupting the branching system of tubes, tracheae which connected to spiracles which conduct air from the atmosphere to all living regions of the insect's body.

NBCM dissolve the external cuticle of the insects which affect the loss from the body water vapor through evaporation and expose it to further NBCM invasion.

NBCM attack the flexible cuticle in between the segments of the insect's body such as the joints of the limbs and other appendages. The insects will paralysis and starve to death.

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