



## Insecticides

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The organo-chlorine insecticide DDT has gone out of favor, because of its non-biodegradability i.e.; it leaves residue which is incompatible with the environment, viz; causes harm to humans, birds and aquatic life. On the other hand the naturally occurring pesticide, pyrethrum (isolated from a type of chrysanthemum) is highly selective in action and is biodegradable. Thus it kills mosquitoes and pyrethrum subsequently gets degraded in presence of air and sunlight. Likewise the bioactive molecule in Neem Leaves produces antifeedant action on the target insects. These lose appetite and die of starvation. Neem is relatively inexpensive and ecologically sound pesticide.

### Biosynthesis of hormones

Recombinant DNA technology (RDT) has been exploited by scientists to biosynthesize Insulin hormone, useful in the treatment of diabetes. Previously it was obtained from the pancreas of slaughtered animals (pig or bull)

RDT involves combination of DNAs obtained from humans and *E.coli*, in a test tube and after suitable modifications, the resultant DNA is introduced into bacterium – *E.coli*. The bacterial cells will be able to process the instructions to assemble amino acids for insulin molecule.

RDT has also been employed for the production of the following hormones:

1. Useful in treatment of non healing ulcers of diabetics
2. Human growth hormone for dwarfism
3. Hormone for arresting otherwise uncontrollable bleeding (hemophilia) in children

### **Possibility of securing life saving drugs at affordable prices**

Organic reactions involve bond breaking and bond making processes. If the bond breaking is random, the result product is a mixture of compounds. If one desires to get a pure compound in 100% yield, then synthetic attempts should be directed to break select bonds and no other. The researches of Prof. Ahmed Zewail, for the development of femtosecond spectroscopy hold a promise in this direction. This development would have direct bearing on the synthesis of life saving drugs, which would be obtainable in quantitative yields and completely free from side products. This would result in sharp drop in the price of these drugs to the level that poor patients can afford to purchase them.