

B.Sc. III Year (Theory)
Semester –VI
Paper XX (C)
Microbiology and Disease Management

Unit-2

Disease management:

2. Control methods

C. Fungicides

**vi. Antibiotics – Streptomycin and
Aureofungin**

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ANTIBIOTICS

There has been a continuous search for antibiotics for the control of plant diseases. According to Martin, more than 340 antibiotics have been found to be of no practical value because of their instability and undesirable properties. Only a few have been found to be promise.

1) Streptomycin:

It is obtained from culture filtrates of certain strains of *Streptomyces griseus*. Its chemical structure is that of a glycoside in which a glycone streptidine is linked to N-methyl glucosamine through an unusual sugar streptose. It is strongly basic in character and is marketed as sulphate or hydrochloride. A formulation of streptomycin mixed with oxytetracycline (Terramycin) is marketed under the name Agrimycin. Streptomycin is effective against both Gram-positive and Gram-negative bacterial plant pathogens but they do not show any toxicity against true fungi.

It is systemic in nature, but due to its possible phytotoxicity application in desirable concentration is limited. Streptomycin has been successfully used against bacterial seed borne pathogens at 100 ppm or more. There is possibility of development of strains of bacteria resistant to streptomycin. Addition of oxytetracycline retards the development of resistant strains; hence the use of Agrimycin is advocated. Streptomycin and Agrimycin are compatible with lead arsenate, DDT, aldrin, fixed copper fungicides, ferbam, parathion, wettable sulphur and zineb but not with gamma-BHC, chlorden or glyodin.

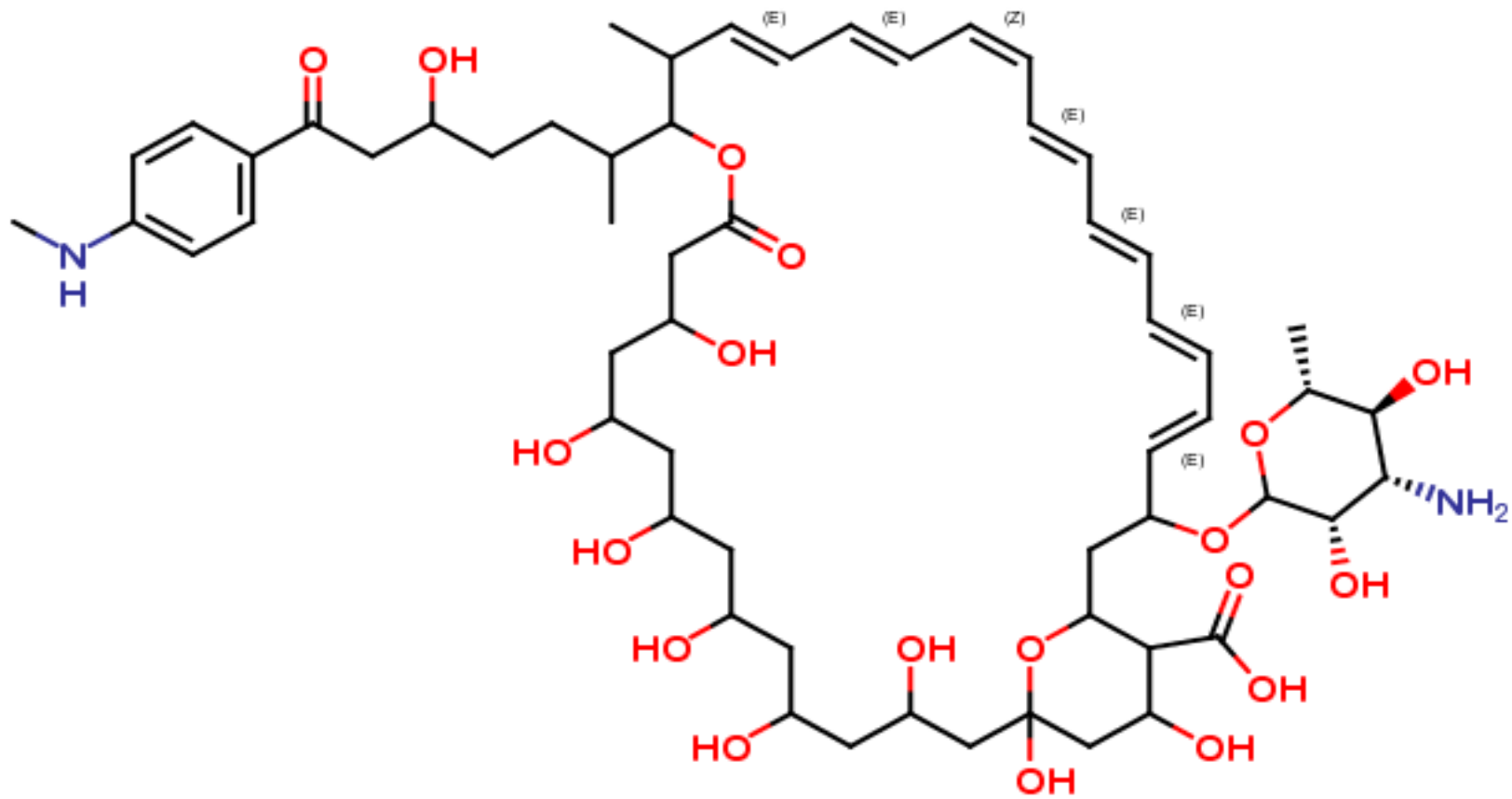


2) Aureofungin:

It is produced in submerged cultures of *Streptomyces cinnamomeus* var. *terricola* in the Hindustan Antibiotics, India (1964). Chemically it belongs to a new aromatic subgroup among heptaene- the aromatic moiety being N-methyl-p-amino aceptophenone and mycosamine.

It is insoluble in water, but soluble in alkaline solutions, hence soap solution of this antibiotic (1gm in 10 ml water) can easily be prepared. It is unstable in the presence of moisture and light. It has been claimed to be a broad-spectrum antifungal antibiotic systemic in nature. It is non-toxic to warm blooded animals. It has been found to be effective in controlling several fungal diseases. Normal concentration of use is 5-10 mg/1000 ml.

In spite of the possibility of effective use of antibiotics in the control of plant diseases, very few practical applications in wide scale have been made. But in japan, there has been a tremendous development in the use of antibiotics for the control of plant diseases.



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