

Date - 17-02-2025 Department of Botany - B.Sc part-III, Honors E-Copy  
online class, J.J. College Ara, Dr Sunil Pandit. Time - 10:00 - 11:00 AM

Group - B, paper - D - plant pathology.

Question → Describe the role of enzymes in the development of plant disease or plant pathogenesis?

Ans → The enzymes which are secreted by the disease producing microbes are always helpful in creating disease in the host plants. The microbes when come to host plant or animals, they secrete some enzymes which destroy the cell wall of the host and make a way to enter the microbes into the body of the host. First of all the microbes attach to the body of host and secrete hydrolytic enzyme which destroy the cell walls of the host tissues, as a result the coherence of the cells is lost. After that the pectic acid and cellulolytic enzymes are secreted which destroy the cytoplasm of the cells. Thus the microbes make the way to enter into the body of the host destroying the cells and their contents. Following are some enzyme secreted by microbes: —

1. **pectic enzyme** → The enzyme is secreted by several bacteria, monadodes and fungi. This enzyme may be divided into two groups.

(A) pectinesterases (PE)

(B) polygalacturonases (PG)

(2) **Macerating enzymes** → protopectinases enzymes attack on protopectin substances and convert the soluble substances from insoluble one and decompose the middle lamella.

(3) **cellulolytic enzymes** → The enzymes mainly destroy the cell walls and give nutrition to the microbes. They hydrolyse the cellulose components such enzymes are produced in sufficient quality by *Sclerotium rolfsii*.

(4) **Hemicelluloses** → Several saprophytic acid parasitic microbes secrete this enzyme which convert them into pentoses and uronic acids. It has been observed that *Sclerotinia sclerotiorum* microbe secretes xylanase and arabinase enzymes in sunflower plant.

(5) **Lignolytic enzymes** → The bacteria are not capable of producing such enzymes but several fungi (about 500-550) of class basidiomycetes produce these enzymes which decompose lignin.

(6) **proteolytic enzymes** → These enzymes are produced by pitriularine species,