



# The Dynamics of Plant Defence Against Pathogens

Ritesh Kumar\*, Abhinandita Sahoo, Deepak Kandher, Gagan Kumar, Boddana Praveen

Department of Plant Pathology, MSSSoA, Centurion University of Technology and Management, Odisha

\*Corresponding Email: ritesh.kumar@cutm.ac.in

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## Abstract

Different forms of plant pathogens are in contact with plants as the plants are under open ground and various harsh environmental conditions. Plants interact with these pathogens in different ways, many of which lead to disease conditions. In the passive defence system, plants have physical as well as chemical barriers against the pathogens. Physical barriers comprise of wax, cuticle, cell wall, stomata and lenticels, while chemical barriers include phytoanticipins. In active defence, plants may respond immediately after the infection or may take several days. For immediate response, plants may show hypersensitive reaction and in delayed defence response, Systemic Acquired Resistance and Induced Systemic Resistance plays the role against invading plant pathogens.

**Keywords:** Physical barrier, chemical barrier, Antagonism, Acquired resistance

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In plants, the diseases may be considered as an exception rather than the rule due to the reason that most of the plant pathogens do not attack a vast number of plants as they have a particular range of hosts. Plant pathogens can be broadly divided as necrotrophs and biotrophs. Necrotrophic pathogens exist among a wide host range involving many plant species as well as with a host range restricted to a few plant species or even few cultivars within a particular species. The main difference among these two groups of necrotrophs is the specificity of their secreted toxin(s). Necrotrophs with a large host range secrete toxins that influence the common metabolic targets of plants, while toxins controlled by the genes are secreted by necrotrophs with a restricted or selective host range (Dou and Zhou, 2012). The interaction of plant with pathogen may leads to:

i. There will be no relation between the plant and pathogen.

- ii. Symbiosis or mutual relationship between plant and pathogen.
- iii. Antagonistic relationship between plant and pathogen.
- Plant is antagonistic for the pathogen
  - Pathogen is antagonistic for the plant
  - Both, plant and pathogen are antagonistic to each other.

To shield from plant pathogens, several plants have impenetrable obstacles in different forms like bark, waxy cuticles or adaptations, like thorns and spines. Antimicrobial chemicals, proteins, and enzymes that are capable of battling pathogens are also produced by plants. Broadly, the protection of plants from

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