

Insects are vulnerable to diseases caused by pathogenic microorganisms. Microbial control offers a safe and specific way to manage insect pests, as it poses no threat to humans or other organisms. Entomopathogenic and antagonistic bacteria, being unicellular prokaryotes, are the foundation for many commercially successful microbial insecticides. These bacteria primarily enter insects through their mouths or guts, but can also infiltrate through other routes like the reproductive system, cuticles, spiracles, and even through the actions of parasitoids and predators. Once inside, they disrupt the insect's physiology, leading to disease and death. Over 100 types of bacteria with antagonistic effects on insects have been identified, many of which are non-spore forming, facultative pathogens residing in the soil and insect gut. These bacteria can cause illness in the host under stressful conditions or in the presence of other pathogens. The potential for integrating microbial control with other pest management methods, particularly chemical control, is a significant advantage of this approach.