

Abstract

Bombyx mori L., belongs to family Bombycidae, is representative insect of the order Lepidoptera. Silkworm is monophagous feeding on the mulberry leaves only and its generation time is about 27 days. It is domesticated worldwide for silk production and also used as model organism for scientific research. When silkworm is continuously reared, it become prone to many infections some of which are muscardine, pebrine, grasserie and flacherie. Bacterial infections are quite common in silkworm. The bacteria which infect silkworm are *Staphylococcus epidermidis*, *Streptococcus liquifactions*, *Klebsiella pneumoniae*, *Enterococcus faecalis*, *Proteus vulgaris* etc. Antibiotics were used to control the infections in silkworm previously but with time the bacteria have developed resistance against antibiotics. To deal with this issue nanoparticles can be used due to their significant antibiotic potential even against multidrug resistance bacteria.

Hemolytic test was performed to test the pathogenicity of the bacterial isolates. Later on, their biochemical characterization was done. Antibacterial activity of different antibiotics (ciprofloxacin, levofloxacin, metronidazole, azithromycin, amoxillin, vibramycin, oxytetracycline and moxifloxacin) was tested against bacteria. Plant extracts were prepared using some medicinal plants (*Azadirachta indica*, *Syzygium cumini*, *Ficus religiosa*, *Eucalyptus camaldulensis*, *Aloe vera*, *Citrus limon*, *Allium cepa*, *Syzygium aromaticum*, *Trachyspermum ammi*, *Cuminum cyminum*, *Cinnamomum zeylanicum* and *Trigonella foenum-graecum*). Silver nanoparticles were synthesized from these plant extracts. Well diffusion method was used to evaluate the bactericidal potential of these plant extracts and respective silver nanoparticles. Both the plant extracts and respective silver nanoparticles showed significant bactericidal potential against selected bacterial strains. Some of the bacterial strains were resistant to some plant extracts. It can be concluded by this study that silver nanoparticles of the plant extracts can replace the antibiotics as the bacteria which were resistant to antibiotics showed sensitivity against silver nanoparticles. Further studies are required to analyze the effectiveness of silver nanoparticles and their mechanism of action, so that their functioning can be accelerated before their clinical use.