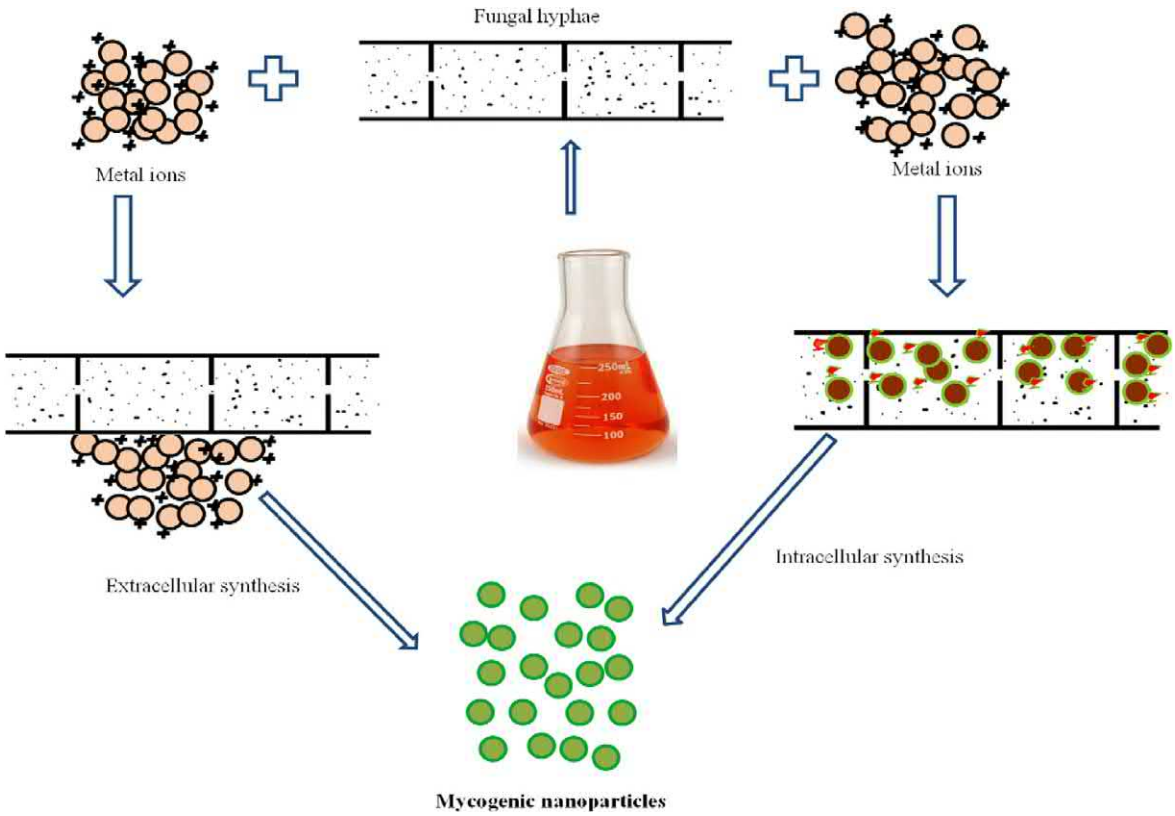

FIG. 1 Schematic representation for the synthesis of myconanoparticles.

particles. Therefore, the reduced metal ions could lead to the formation of smaller nanometer-sized particles in the solution [23]. The activity of microbes and movement of ions are directly affected by temperature, and hence, have a significant effect on the synthesis of NPs in many ways, such as size, shape, and monodisperity. For example, the synthesis of AuNPs was carried out at different temperatures, and a remarkable increase in the particle size, from 10 to 50 nm, was observed with an increase in temperature, whereas a low monodisperity at a higher temperature was found [24]. This variation in size, shape, and monodisperity could be attributed to the reduced activity of microbial reducer enzymes at low and high temperatures, respectively [25].

2.4. Role of NPs in the Treatment of Infectious Diseases

Infectious disease is a clinically observable disorder, caused by pathogenic microorganisms that may be a bacterium, fungus, virus, or a parasite. Presently, the appliance of nanotechnology in treating and diagnosing the infectious diseases is expected to change the prospect of pharmaceutical industries in the future. Nanotechnology would play an outstanding role in the early detection of pathogens and in targeting specific antibiotic therapy [26]. Metal-based NPs are reported to show exceptional interactions with cellular biomolecules inside the celland on the cellular surfaces. Several approaches, such as the introduction of biological moieties having specific binding sites to a particular target cells, may further improve the efficacy at the pathological level. The cellular interaction of NPs can be used to develop therapeutic platform for the treatment of several infectious diseases [27]. The study and control of other parameters such as toxicity and pharmacokinetics is also needed. NPs hold the great potential to conquer the existing resistance of pathogens to the available drugs. The encapsulation of antimicrobial drugs, using NPs, has emerged as a novel and promising alternative that may enhance the therapeutic efficacy and minimizes the adverse side effects of drugs. NPs having antimicrobial properties have a number of clinical