3.2.3. Transmission Electron Microscopy Studies

The transmission electron microscopy (TEM) results of all synthesized formulations are shown in Figure 5. TEM micrographs show the morphology, shape and dimensions of silver nanoparticles in synthesized (AgCl, Ag)NPs/diatomite hybrid composites with a concentration of immobilized silver equal to 4.65% and 7.21%. It can be observed that the spherical shapes of the nanoparticles are uniformly dispersed on the diatomite surface. Nanoparticles with sizes from 3 to 6 nm predominate. Nanoparticles found in the ranges of 8–10 nm and 1–2 nm are also present. Similar results were observed for (AgCl, Ag)NPs/diatomite composite containing 0.71% silver. The size of the nanoparticles decreases with decreasing initial silver concentrations in the solution used for the preparation of (AgCl, Ag)NPs/diatomite composites.

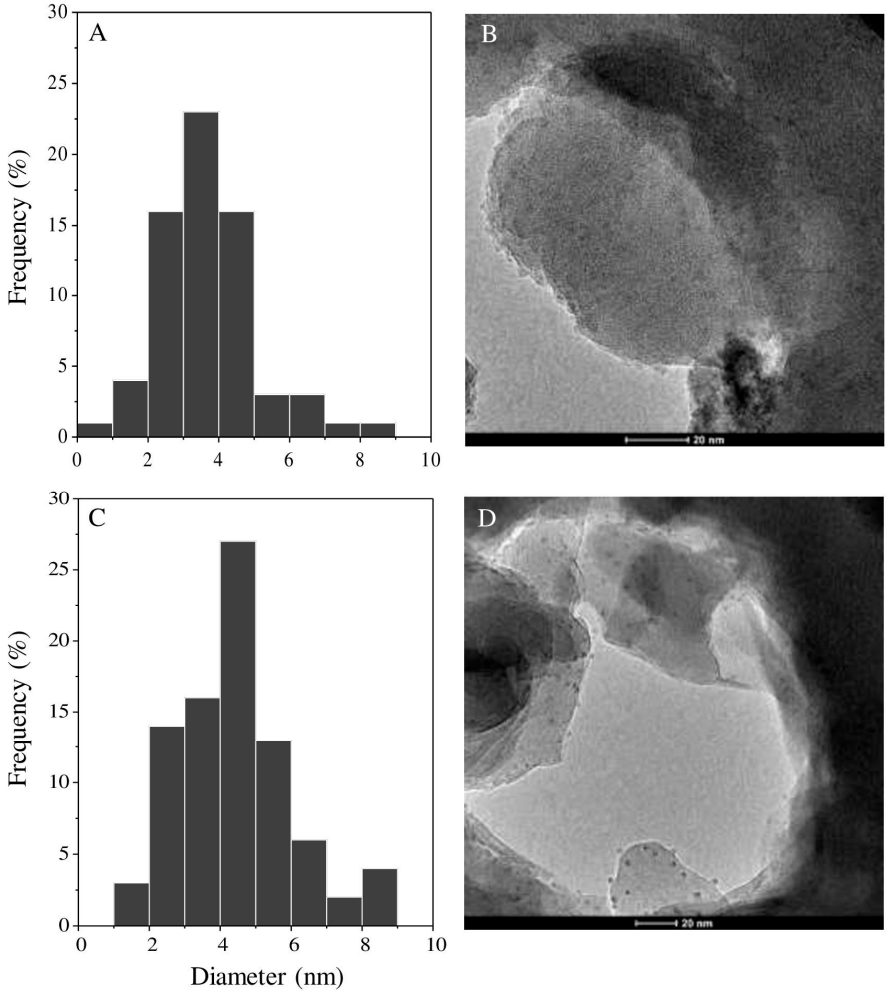

Figure 5. TEM micrographs of synthesized hybrid (AgCl, Ag)NPs/diatomite composites with silver concentrations of 4.65% (**A**,**B**) and 7.21% (**C**,**D**).

3.3. Antibacterial Activity

The minimal inhibitory concentrations (MIC) of (AgCl, Ag)NPs/diatomite composites on *Staphylococcus aureus* and *Klebsiella pneumonia* strains obtained in this study are presented in Table 3. According to Table 3, after 24 h of incubation, a similarity between the antimicrobial activity of 4.65% and 7.21% Ag/diatomite was observed in contrast to the 0.71% Ag/diatomite sample. Both 4.65% Ag/diatomite and 7.21% Ag/diatomite were more efficient than 0.71% Ag/diatomite and presented an inhibitory potential of about 2.5 mg/mL against *Staphylococcus aureus* and 5 mg/mL against *Klebsiella pneumonia*. Moreover, all the tested formulations showed low efficiency against *Klebsiella pneumonia*, but high inhibitory ability against *Staphylococcus aureus*. Furthermore, in the case of both bacterial strains, the same trend was noticed. However, all the tested samples presented a high