



## Effect of Silver and Zinc oxide Nanocompound Mixture on Growth and Some Physiological Properties of *Sclerotinia sclerotiorum*

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**Abstract:** Laboratory experiments were carried out in at Kerbala University, Iraq to study the effect of silver and zinc oxide nanocompound (Ag/ZnO) on the *sclerotinia sclerotiorum* (Lib.) De Bary. A series of experiments were carried out, which included the isolation and diagnosis of *Sclerotinia sclerotiorum*, phenotypic and laboratory, and then molecularly using the polymerase chain reaction technique, using ITS4 , ITS1 (Internal transcribed spacer), and the fungal isolates *S. sclerotiorum* (MMBIRAQ) were recorded for the first time in Iraq National Center for Biotechnology Information (NCBI) under Entry Numbers (MF167296) at GenBank. the highest percentage of genetic similarity was with the isolated from Italy, amounting to 99%, while the more distant isolated was from Canada, accounting to 96%. The mixture between Silver and Zinc oxide nanocompound (Ag/ZnO) was present in the laboratory in terms of 1 nanocompound volume / 50 the volume of the potato dextrose agar solution before solidation). The results showed that Ag/ZnO had a significant effect on the fungal colony diameter in Potato dextrose agar (PDA) after 5 and 12 days of inoculation at 50 µml and the highest volumes. The Ag/ZnO compound caused the disappearance of sclerotia ranging from 25µml to 2 ml. The sclerotia mass was 0.04 g. The effect of Ag/ZnO on biomass of Potato dextrose broth (PDB) was significant at 25µml and the highest volumes. The effect was significant on cell length at 25 µml and the highest volumes, while the thickness was at 50µml. The effects of Ag/ZnO on cell decomposition and destruction were caused by cell wall rupture. The significant difference in the production of oxalic acid was at the volume of 25 µml and the highest volumes. The average number of sclerotia in the subsequent generation was 8.88 sclerotia with a diameter of 0.16 cm.

**Keywords:** *Sclerotinia sclerotiorum*, Fungal nanotechnology

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