



Efficacy of nanoparticles on seed borne fungi and their pathological potential of cucumber

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Abstract: Several seed borne fungi of cucumber are including pathogenic isolates of *Fusarium oxysporum*, *Trichoderma* spp., *Alternaria alternata* and *Aspergillus niger* were causing seed rot, pre and post emergency damping off of cucumber seedlings. Six nanoparticles of silver and copper were tested at different concentrations i.e., 0,1,2,5, 10, 15 and 20 ppm on mycelial growth of highly pathogenic fungal isolates. Silver nanoparticles NRC4 and NRC3 was completely suppressive mycelia growth 100 % of *A. alternata* and *F. oxysporum* at 10 and 15 ppm respectively, as well suppressive *Trichoderma* sp. 90 % and 85% at 20 ppm respectively. All nanoparticles tested not effect at different concentrations on mycelial growth of *A. niger*. Soaking cucumber seeds Cv. Beta alfa on silver nanoparticles NRC4 at 20 ppm for different periods i.e. 5,10,15,30 and 60 minutes were reduced fungal genera associated with cucumber seeds compare on the untreated seeds. Increasing nano silver concentrations were increasing reduction on fungal of cucumber seeds. Soaking cucumber seeds for 15 minutes, completely suppress fungal genera of *A.flavus*, *Fusarium* spp. and *Trichoderma* spp., No any treatment completely inhibition *Alternaria* spp., but high reduction of *Alternaria* spp. fungi was recorded at soaking time for 60 minutes. Application of soaking cucumber seeds on silver nanoparticles NRC4 at 20 ppm for 60 minutes before sowing in potted soil artificially infested by each pathogenic fungi were significantly reduced seed rot, pre and post emergency damping-off of cucumber seedlings compare the untreated treatments. Silver nanoparticles NRC4 promising as alternative fungicides for controlling seed borne fungi of cucumber seeds in nurseries for production plantlets free fungal infection.

Key words: cucumber, silver nanoparticles, seed borne fungi.