Experimental remarks for determine correct dosage silver Nano particle against infective microbes

S.J.Ashrafi[1*], M.F.Rastegar[2], G. Amoabediny[1], and S.A. Kumar[3]
[1]Dept of NanoBiotechnology, Faculty of new science and technology, Tehran Univesity, Teharn, Iran.
[2] Dep of Plant protection, Ferdowsi university of Mashhad, Mashhad, Iran.[3] Biosciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee,USA

INTRODUCTION: It is known that, silver species show different effects in anti microbial and toxicity tests. Therefore it is necessary to use standard protocol on the basis of which both biology and nanotechnology parameters are considered. Some of these parameters are: diversity in nano-silver synthesis methods, type of stabilizer, size, shape, size distribution and concentration of nano particles, type of culture media and component of them, condition of tests, effect of light or uv-light to nano-silver and its antimicrobial potentials, role of time in tests, etc. Each of these factors could cause the result of one test to become specific to the parameters of that test i.e, experimental conditions, type of nano-silver and type of microorganism , and thus will not reliable extended to the experiments with different parameters(1). In this work we present a one of these variable parameter about effect of against fungal plant pathogen *Pythium ultimum*.

METHODS: Commercial brand (nanocid, nanonasb pars COM, Iran) of silver nano particle (AgNps) use for all tests. Plant pathogen fungus, *Pythium ultimum* prepared form Myco collection of Ferdowsi university of Mashahd. Antifungal test carry out against mycelium and zoospore of this pathogen at lab condition (in vitro). Two conditions, solid and liquid investigated. Potato dexterous agar (PDA), corn meal agar (CMA) and water agar (WA) used as solid media. Potato glucose broth (PGB) as a liquid media for mycelium. For all test AgNps added to outoclaved and coled media appromixly at 50C. for zoospore test ,fresh fungus added to cannabis water media after 2dayes suspension of 10^6 prepared and dipped in different dosage of AgNps (5,15,30,60,90ppm). Zoospore germination investigated under light microscope fro 6 days. Several factor such as colony grow diameter, percentage of spore that could germinate, Wight of mycelium deliberated for the estimating the inhibitor dosage of AgNps correctly.

RESULTS: Variable result observed at all tests and methods, for solid condition fungus response to AgNps that combined with Medium (Fig 1). As seen in CMA media effective dosage is between 200-500ppm, for PDA fungus could even at 500ppm while for WA media inhibitor dosage is less than 50ppm because it could not growth in none of dosage in this media.

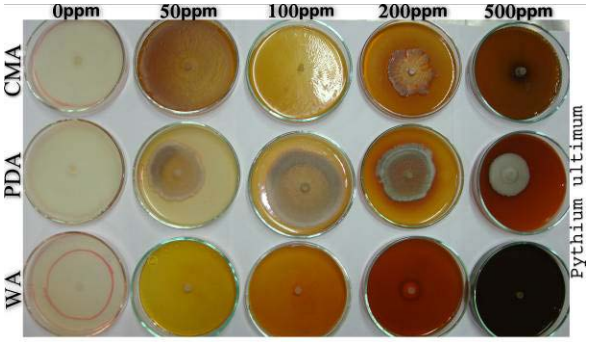

Fig. 1: different response of fungus to silver nano particle at 3 media at solid condition.

Zoospore germination inhibited in 5 ppm while in PGB media that there were both zoospore and mycelium fungus stopped in15ppm of AgNPs. Despite this differ liquid phase is more effective for pathogen controlling.

DISCUSSION & CONCLUSIONS about variation result in solid media our guess that is not related to nutrition effect of medium for fungus but related to effect of components on the nano particles. Like other report , The reason for this might be the inactivation of metallic silver when it comes in contact with blood plasma and the lack of durability of the coatings. The metallic silver also failed to improve the antimicrobial activity (2,3). At there we shown affect of just one of mentioned parameter in antimicrobial nano particle.

REFERENCES:[1]Ashrafi et al. 2010. American-Eurasian J. Agric & Environ Sci 7(1) 70-74. [2]Riley et al. 1995. Am J Med; 98:349–56.[3] Everaet et al. 1998. J Mat Sci-Mat in Med 9:147–57