

Electronic Supplementary Information

Table: S1 The Comparison study of green synthesized Hc-AgNPs with reported AgNPs in different applications like metal ion sensing, Antifungal and Antibacterial activity

Nanoparticles	Reducing Agent (Extract)	Test Pathogens	NPs used (concentration/ amount)	Method used	Fungitoxicity Effect/ Antibacterial effect	Metal ions	References
AgNPs & AuNPs	L- tyrosine	--	--	Colorimetric	--	Hg ⁺² , Pb ⁺² and Mn ⁺²	Annadhasan et al., (2014) [1]
AgNPs	<i>Sonchus arvensis L</i>	--	--	Colorimetric	--	Hg ⁺² , Fe ⁺³	Chandrakar et al., (2019) [19]
AgNPs	<i>Soap root plant</i>	--	--	Colorimetric	--	Hg ⁺²	Farhadi et al., (2014) [39]
AgNPs	<i>Bauhinia variegata L</i>	--	--	Colorimetric	--	Hg ⁺² , Fe ⁺³	Chandrakar et al., (2022) [47]
AgNPs	<i>Lycopersicon esculentum</i>	--	--	Colorimetric	--	Cr ⁺³	Mathew et al., (2018) [61]
AgNPs	<i>Cordia myxa leaf</i>	--	--	Colorimetric	--	Fe ⁺³ , Hg ⁺²	Majid Hashemi et al., (2018) [62]
AgNPs	<i>Murraya koenigii</i>	--	--	Colorimetric	--	Hg ⁺²	Hasana et al., (2017) [63]
AgNPs	<i>Carica papaya fruit</i>	--	--	Colorimetric	--	Hg ⁺²	Sundaryono et al., (2017) [64]

AgNPs	<i>Matricaria recutita</i>	--	--	Colorimetric	--	Hg ⁺²	Imran Uddin et al., (2017) [65]
AgNPs	<i>Aconitum violaceum</i>	--	--	Colorimetric	--	Pb ⁺²	Abdul Niaz et al., (2018) [66]
AgNPs	<i>Ficus Benjamina</i>	--	--	Colorimetric	--	Zn ⁺²	Israel López et al., (2019) [67]
AgNPs	<i>Green tea</i>	--	--	Colorimetric	--	Hg ⁺²	Erturk et al., (2019) [68]
AgNPs	<i>Citrullus lanatus</i>	--	--	Colorimetric	--	Ni ⁺²	Rattanakit et al., (2019) [69]
AgNPs	<i>Bauhinia Variegeta leaves</i>	--	--	Colorimetric	--	Fe ⁺³	Deniz Uzunoglu et al., (2020) [70]
AgNPs	<i>French lavender</i>	--	--	Colorimetric	--	Hg ⁺²	Demirezen et al., (2021) [71]
AgNPs	<i>Ziziphus mauritiana</i>	--	--	Colorimetric	--	Hg ⁺²	Memon et al. (2022) [72]
AgCu-BNPs	<i>Folic and Ascorbic acid</i>	--	--	Colorimetric& Fluorometric	--	Hg ⁺²	Ruyan Xie et al., (2021) [73]
AgNPs	<i>Piper Chaba stem</i>	--	--	Colorimetric	--	Hg ⁺²	Mahiuddin et al., (2023) [74]
AgNPs	<i>Mentha arvensis</i>	--	--	Colorimetric	--	Al ⁺³	Dinesh Kumar et al., (2018) [75]
AgNPs	<i>Trigonella foenum-graecum L</i>	--	--	Colorimetric	--	Hg ⁺² , Fe ⁺³	Sushila Singh et al., (2023) [76]
AgNPs	<i>Bistorta amplexicaulis root</i>	--	--	Colorimetric	--	Hg ⁺² , Pb ⁺²	Hai Xiong et al. (2023) [77]

AgNPs	<i>Equisetum diffusum</i>	--	--	Colorimetric	--	Hg ⁺²	Hatem et al., (2023) [78]
Hc-AgNPs	<i>Hedychium coronarium leaves</i>	--	--	Colorimetric	--	Hg⁺², Sn⁺²	Present ork
Fungitoxicity Effect							
AgNPs	<i>Arthroderma fulvum (fungus)</i>	<i>Fusarium oxysporum</i> <i>Fusarium moniliforme</i> <i>Fusarium solani</i> <i>Aspergillus flavus</i> <i>Aspergillus trrrus</i> <i>Aspergillus fumigatus</i>	0.125–4.00 µg/mL	Broth microdilution method	80%	--	Baiji Xue et al., (2016) [79]
AgNPs	<i>Morus nigra leaves</i>	<i>Fusarium oxysporum</i> <i>Aspergillus flavus</i> <i>Aspergillus terrus</i> <i>Fusarium verticillioides</i>	1.6 %	Agar well diffusion	41.66 ± 0.47 % 36.0 ± 0.41% 33.66 ± 0.63% 42.33 ± 0.63%	--	Karam El-Din et al., (2017) [80]
AgNPs	<i>Aspergillus Niger</i>	<i>Fusarium oxysporum</i> <i>Aspergillus flavus</i>	10 µg/mL	Agar well diffusion	91.0 % 97.3 %	--	Hayam Abdelkader et al., (2019) [81]
AgNPs	<i>Brazilian greenpropolis</i>	<i>Fusarium oxysporum</i>	20.8 mg/l	Agar well diffusion	50%	--	Melyssa Negri et al., (2020) [82]
AgNPs	<i>Amaranthus retroflexus leaves</i>	<i>Fusarium oxysporum</i>	400 µg/mL	Agar well diffusion	53.83 ± 1.0mm	--	Bahrami -Teimoori et al., (2017) [83]

AgNPs	<i>Cassia roxburghii</i> <i>aqueous leaf</i>	<i>Aspergillus niger</i> <i>Aspergillus fumigatus</i> <i>Aspergillus flavus</i>	10 µg (40µL)	Agar well diffusion method	16.0 ± 2.00 mm 20.6 ± 1.52 mm 19.3 ± 1.52 mm	--	P. Balashanmugam et al., (2016) [84]
AgNPs	<i>Cell-free extract</i> <i>(CFE) of Bacillus</i> <i>thuringiensis MAE</i>	<i>Aspergillus niger</i> <i>Aspergillus terreus,</i> <i>Aspergillus flavus,</i> <i>Aspergillus fumigatus</i>	500 µg /mL	Agar well diffusion method	16 mm 20 mm 26 mm 19 mm	--	Amr H. Hashem et al., (2022) [85]
AgNPs	<i>Helvella leucopus</i>	<i>Penicillium chrysogenum</i> <i>Aspergillus niger</i> <i>Alternaria alternata</i>	20mg/mL	Agar well diffusion method	24.00 ±1.00 mm 20.33±0.57 mm 19.33±1.54 mm	--	Mehrajudin Talie et al., (2023) [86]
AgNPs	<i>Coriander leaves</i>	<i>Rhizopus stolonifera</i> <i>Fusarium solani</i>	1 mg/mL	Agar well diffusion method	90.00 mm 34.08 ±2.04 mm	--	J. M. Moreno Vargas et al., (2020) [87]
AgNPs	<i>Juniperus procera</i>	<i>Fusarium</i> <i>chlamydosporum</i> <i>Aspergillus fumigatus</i>	100 mg/ml PE + 50 ppm AgNPs	Poisoned-food technique	Leaf extract 50.55 % Fruit extract 29.67 % Leaf extract 59.06 % Fruit extract 21.06 %	--	Marwah M. Bakri et al., (2020) [88]
AgNPs	<i>Borago officinalis</i>	<i>Candida albicans</i> <i>Aspergillus flavus</i>	100 µg/ml	Disk diffusion assay	6 mm not inhibited	--	Sanjay R. Kumavat et al., (2021) [89]
Hc-AgNPs	<i>Hedychium</i> <i>coronarum leaves</i>	<i>Fusarium oxysporum</i> <i>Aspergillus flavus</i>	1.5 mg/ mL 1.5 mg/ mL	Poisoned-food technique	57.93 ± 4.18 % 59.58 ± 3.68%	--	Present work

Antibacterial Effect

AgNPs	<i>Hedera nepalensis</i>	<i>Erwinia carotovora</i> subsp <i>Ralstonia solanacearum</i>	1000 µg/ml	Agar well diffusion method	15 mm 15 mm	--	Zainab Bibi et al., (2023) [90]
AgNPs	<i>Spent Mushroom Substrate Extract</i>	<i>Ralstonia solanacearum</i>	30.0 mg/l	Nutrient Broth (NB) liquid medium	90%	--	Wenjing Mo et al., (2024) [91]
AgNPs	<i>Rubus fruticosus</i>	<i>Erwinia carotovora</i> <i>Ralstonia solanacearum</i>	1000 mg mL ⁻¹	Nutrient Broth (NB) liquid medium	90% 100%	--	Adnan Khan et al., (2024) [92]
AgNPs	<i>Cottonseed oilcak</i>	<i>Ralstonia solanacearum</i>	1–4 mM	Nutrient Broth (NB) liquid medium	90%	--	Muthusamy Govarthan et al., (2016) [93]
AgNPs	<i>P. peruviana</i>	<i>Ralstonia solanacearum</i> <i>P.cartovora</i>	600 mg/L 600 mg/L	Agar well diffusion method	22.22 ± 1.46 % 29.26 ± 0.64 %	--	Marwa A. Samy et al., (2019) [94]
AgNPs		<i>Erwinia carotovora</i> pv. <i>carotovora</i>	150ppm	Agar well diffusion method	(AgAE)13 mm, (AgIB)12 mm	--	Aqleem Abbas et al., (2015) [95]
AgNPs	<i>Azadirachta indica</i>	<i>Xanthomonas oryzae</i> pv	20µg/ml- 100 µl	Agar well diffusion method	29.38±0.92 mm	--	Mounil Mankad et al., (2015) [96]
AgNPs	<i>Euphorbia wallichii</i>	<i>Xanthomonas axonopodis</i>	1000 µg/mL	Nutrient Broth (NB) liquid medium	98%	--	Muhammad Arif et al. , (2022) [97]

AgNPs	Coffea arabica L	X. campestris X.oryzae X. vesicaloria	50 µl of 10 mg/ml	Agar well diffusion method	13.00±1.00 mm 11.66±0.57 mm 11.00±1.00 mm	--	Nagendra Prasad et al. , (2016) [98]
Hc-AgNPs	<i>Hedychium coronarium leaves</i>	<i>Xanthomonas oryzae</i> <i>Ralstonia solanacearum</i> <i>Erwinia carotovora</i>	504 µg/ ml	Agar well diffusion method	16.33 ± 0.57 mm 15.33 ± 0.57 mm 14.33 ± 0.57 mm	--	Present work

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