

The Antibacterial Potential of Biosynthesised Silver Nanoparticles by *Serratia* sp. strain AQ5-NT39 against *Aeromonas hydrophila* and *Streptococcus agalactiae*



1 PROBLEM STATEMENT

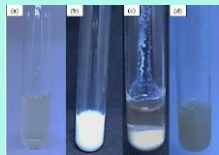
Aeromonas hydrophila and *Streptococcus agalactiae* has lately been emerging as antimicrobial resistance against the conventional antibiotics that are administered that commonly affects the cultivation of red hybrid tilapia

2 WHY IS THIS IMPORTANT?

Integrating silver nanoparticle (AgNP) from biosynthesis by *Serratia* sp. is essential in enhancing the mechanical features and antibacterial properties against infected red hybrid tilapia with *A. hydrophila* and *S. agalactiae*

3 AgNP AQ5-NT39

AgNP AQ5-NT39 is the AgNP green synthesis by *Serratia* sp. strain AQ5-NT39 that act as the nano factories. This AgNP has been reported against *Vibrio alginolyticus* and *Vibrio harveyi* demonstrated the most effective AgNP samples according to the UV-Vis analysis and preliminary antibacterial results (De Silva et al., 2021)

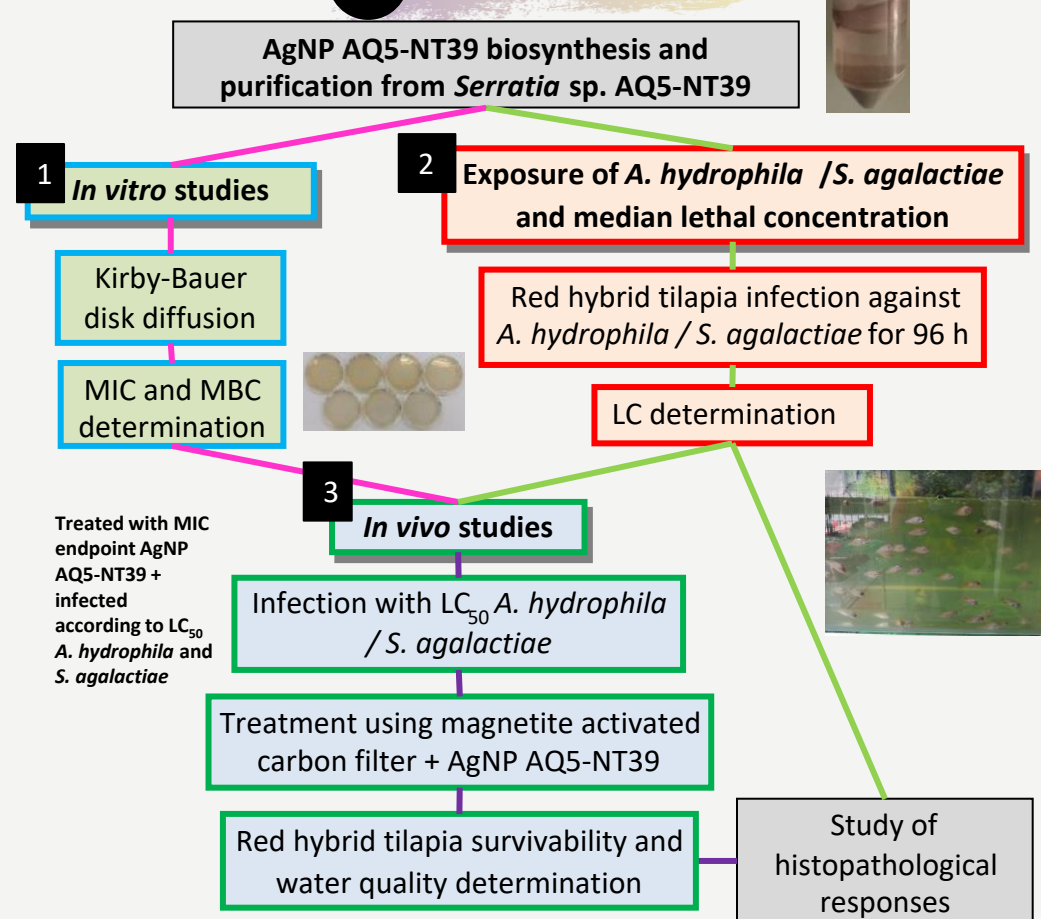


(Adapted from Noor et al., 2020)

4 OBJECTIVE

To examine whether AgNP biosynthesised from *Serratia* sp. strain AQ5-NT39 can display a likely range of antibacterial activity against the freshwater pathogen, *A. hydrophila* and *S. agalactiae*, in any case of its antibiotic-resistant strains or original strains, that frequently infects the red hybrid tilapia

5 METHODOLOGY

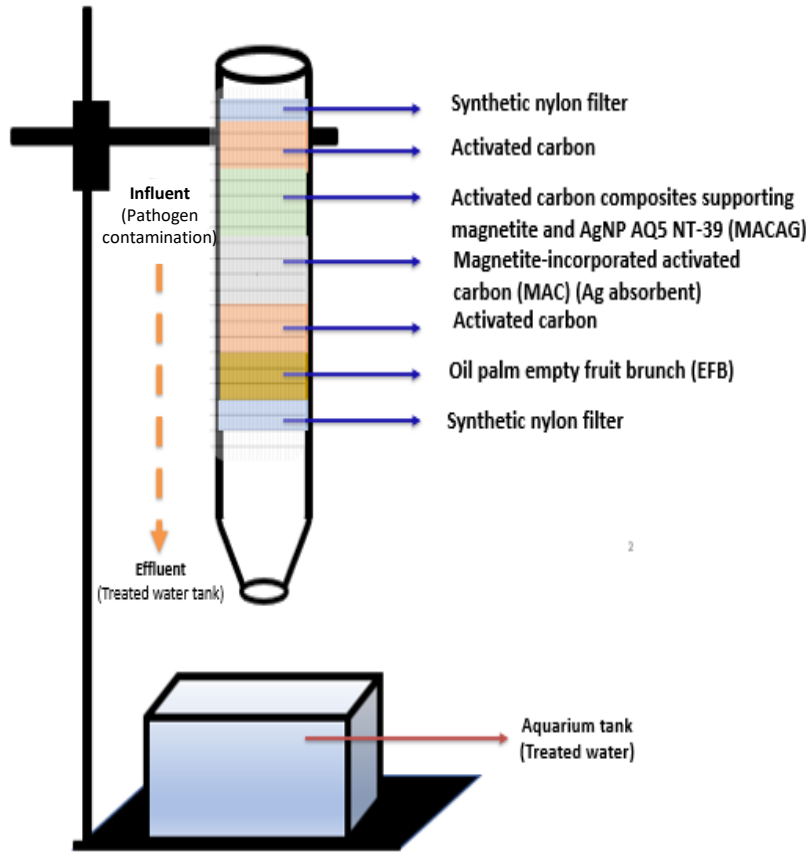


6 NOVELTY

The use of natural products to build up the filter system in which composed of activated carbon/charcoal, empty fruit bunch (EFB) with the AgNP AQ5-NT39 that can act as antimicrobial against *A. hydrophila* and *S. agalactiae*

7

PROPOSED IDEA



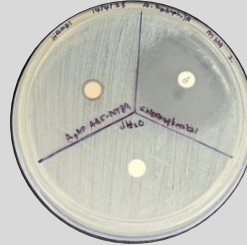
POSSIBLE ACTIVATED CARBON FROM AGRICULTURAL WASTE

- Cogon Grass (*Imperata cylindrica*)
- Guinea Grass (*Megathyrus maximus*)
- Rice straw
- Coco peat
- Oil palm's empty fruit bunch (EFB)

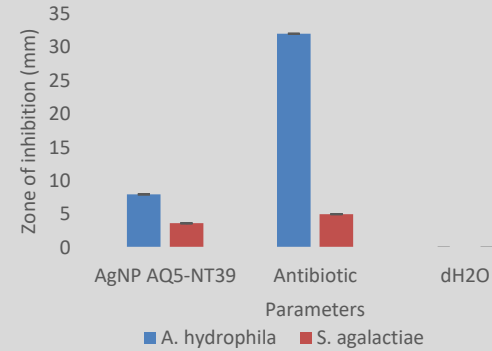
8

RESULTS

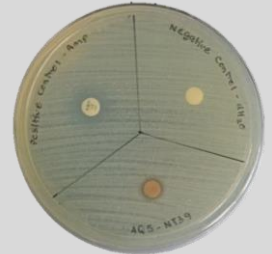
A. hydrophila



KIRBY-BAUER DISK DIFFUSION

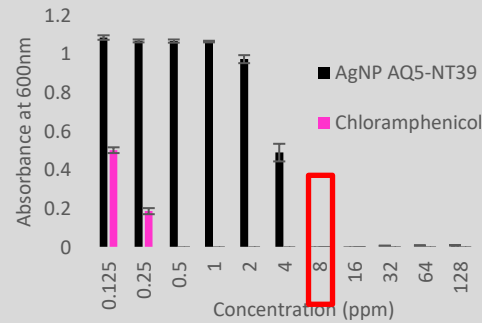


S. agalactiae

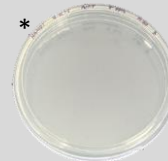
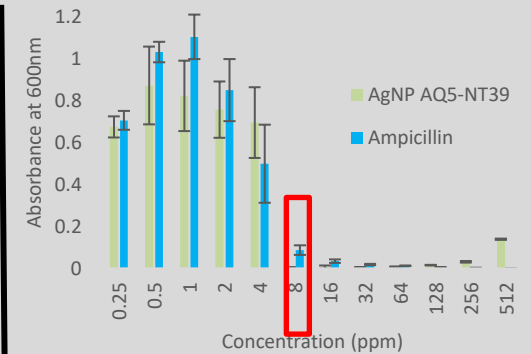


AgNP AQ5-NT39 MIC/MBC DETERMINATION

A. hydrophila

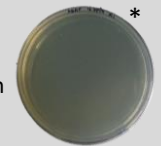


S. agalactiae



MIC: 8 ppm
MBC: 8 ppm

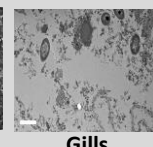
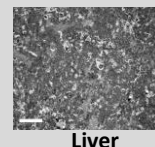
*plates as MBC endpoint, no growth of bacteria present



MIC: 8 ppm
MBC: 16 ppm

PATHOGENS EXPOSURE

A. hydrophila



S. agalactiae

