# Biosynthesis of Ag@GO nanocomposite using the colchicine and evaluation of its antimicrobial properties

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Nanoparticles (NPs) are known to have a wide range of applications in the industry due to their unique structural properties. The biological synthesis of nanoparticles is of interest to researchers because they are relatively cheap, simply and ecofriendly method. In this study, we report the synthesis of Ag@GO nanocomposite using the colchicine and eveluated its antimicrobial activity against the fish pathogens *Aeromonas hydrophila* Gram (-) and *Lactococcus sp.* Gram (+) bacteria. The surface of Ag NPs and GO are determined as negatively charged. For the synthesis of Ag NPs, 10 ml colchicine solution was added 90 ml $AgNO_3$ ($5\times10^{-3}$ M) and stirred overnight in the dark. To attach the Ag NPs on GO, biosynthesized Ag NPs solution was added to graphene oxide (GO) solution. After that firstly dropwise addition of the 2.4 mL NaCl solution (0.09 M) and stirred 10 second, then 5 mL other NaCl solution ( 0.29 M) was added dropwise. The solution was stired about 30 min, and for the separated of Ag@GO nanocomposites centrifuged at 5000 rpm for 5 min. Ag@GO nanocomposites characterizated by scanner electron microscopy (SEM), energy-dispersive X-ray (EDX), ultraviolet-visible spectroscopy (UV-vis), dynamic light scattering (DLS), and zeta potential. As a characterization results, colchiçine based spherical Ag@GO nanocomposite synthesized ecofriendly. According to result of antimicrobial study colchicine-Ag@GO nanocomposite have concentration-depend antimicrobial activity against fish pathogen bacteria due to oxidative damage.

Acknowledgement: This study was financially supported by Erciyes University Scientific Research Projects (BAP) unit FCD-2018-8410.