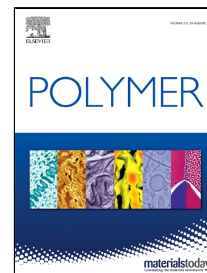


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Green and eco-friendly route for the synthesis of Ag@Vitamin B9-LDH hybrid and its Chitosan nanocomposites: Characterization and antibacterial activity,

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Revised**Green and eco-friendly route for the synthesis of Ag@Vitamin B9-LDH hybrid and its Chitosan nanocomposites: Characterization and antibacterial activity****Shadpour Mallakpour ^{a, b *}, Masoud Hatami ^a**

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ABSTRACT

Firstly, Ag nanoparticle (Ag-NP) was synthesised with environmentally-friendly and green media extracted from *Rosmarinus officinalis* plants. The structure of Ag-NP was confirmed with the absorption peak related to the Surface Plasmon Resonance at 432 nm through UV-Vis analysis. Subsequence, Ag-NP was composited with pre-synthesised vitamin B9 (VB9) intercalated Layered Double Hydroxide (VB9-LDH) and **Ag@VB9-LDH** with different percentages **was** incorporated in the chitosan (CS) as bio-polymeric matrix. The improvement in the physio-chemical properties of prepared nanocomposites (NCs) was confirmed with different spectroscopic techniques. Finally, the effect of polymeric matrix on the antibacterial activity of this compound was examined against two Gram-negative and Gram-positive bacteria. The results of antibacterial test showed the remarkable antibacterial activity **for** all samples against both bacteria and NC 6 wt% showed greater inhibition zone diameter (19

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