

Study on antibiosis of nano-lignin extracted from wood materials by an organic solvent

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Recently, there is increasing interest in the improvement of quality of life that lead to eco-friendly technology demands. One of the technologies is anti-bacterial characteristics which are widely used in public place, for children, hospital and so on.

From the wood powder, extract residue with 96% dioxane then evaporating solvent. To achieve the precipitation by pH 2.5 and filtration for lignin which is the bulk material. This extracted lignin is polymer state that can't conduct being an anti-bacterial agent because of molecular size, too big for anti-bacterial agent. We need to restrain the molecular size under 200 nm. Make the lignin solution with NaOH and nitrobenzene under heating for 3 h that break the lignin polymer to be smaller and then to remove the solvent, add water and ether. This lignin agent shows the anti-bacterial works. We can observe that lignin based anti-bacterial agent suppress the E. Coli completely under 12 h.

In this study, lignin was obtained by the organosolv method to be used in making anti-bacterial agent because they have small particle which is meeting the antimicrobial conditions.