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Antibacterial Activity of Ethanolic Extract and Nanoparticles Ethanolic Extract of Javanese Turmeric Rhizome (*Curcuma xanthorrhiza* Roxb.)

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The aim of this study was to compare the antibacterial activity of 96% (v/v) ethanolic extract of Javanese turmeric (*Curcuma xanthorrhiza* Roxb.) and nanoparticle containing the extract against4 pathogenic bacterias. The method to formulate the nanoparticles extract was ionic gelation using chitosan and sodium tripolyphosphate. The resulting nanoparticles were evaluated for particle size, zeta potential and morphology.The nanoparticle showed a good result, as the particle size was 53.25 nm and polydispersity index was 0.442, with the zeta potential value of + 31.5. The antibacterial activity result showed that the extract could inhibit the growth of *Salmonella thypi, Staphylococcus aureus,* and *Bacillus subtilis* in concentration of 500 ppm. However, the extract could not inhibit the growth of *Escherichia coli* in all tested concentrations. The nanoparticles showed an antibacterial activity against *Staphylococcus aureus* and *Salmonella thypi* in the concentration of 250 up to 500 ppm where as *Escherichia coli* and *Bacillus subtilis* in concentration of 500 ppm. The minimum inhibitory concentration (MIC) of the extract against *Staphylococcus aureus* and *Bacillus subtilis* were 400 ppm and against *Salmonella thypi* in concentration of 500 ppm. n addition, the MIC of *Escherichia coli* was more than 500 ppm. The MIC of the nanoparticles against *Staphylococcus aureus* was 300 ppm while against *Bacillus subtilis* and *Salmonella thypi* 400 ppm and against *Escherichia coli* 500 ppm. Accordingly, the nanoparticles have a promising strategy to formulate the extracts to improve the antibacterial activity.

Keywords: Antibacterial activity, ethanolic extract, Javanese turmeric, nanoparticles

Biography:

Dr. Shirly Kumala has completed her PhD from Biomedical Faculty, University of Indonesia, Jakarta. She is the Dean of Pharmacy Faculty, Universitas Pancasila, Jakarta, Indonesia. She has published more than 25 papers both International and national journals, and has been serving as a reviewer in Journal of Pharmacy.