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Effect OF M. koenigii on the expression of cell wall formation related genes (mecA and fmhb)
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Abstract
Introduction: Generally, quantitative polymerase-chain-reaction technique (qPCR) has been recognized as the gold standard for gene expression analysis. It supersedes the original conventional PCR, due to its ability of measuring the amplification of cDNA in real time as the reaction progresses. Aims: The aim of this study was to determine the effects of the ethyl acetate leaf extract of Murraya koenigii (M. koenigii) on the expression of cell wall formation related genes (mecA and fmhb). Materials and Methods: Ribonucleic acid (RNA) of the bacterial cells (Staphylococcus aureus ATCC 700,699) was extracted using Trizol reagent. The concentrations and purities of all RNA analysis were obtained from NanoDrop Spectrophotometer. cDNA Synthesis Kit was used for cDNA synthesis. The integrity of the cDNA was identified using ethidium bromide, through 1.5% agarose gel electrophoresis in 1 x TBE buffer. Finally, quantitative real-time PCR technique was employed to establish and validate the antibacterial activity of the plant extract on gene expression of the selected genes at the cellular level and the quantification of the gene's expression was determined using delta-delta Ct method. Result: The result revealed that the exposure of the bacterial cells to the plant extract instigated upregulation of the selected genes. This indicates resistance of the bacteria to the treated extract against the selected cell wall formation genes Conclusion: These findings suggest that the ethyl acetate leaf extract of M. koenigii lacks potential antibacterial activity on the expression of cell wall formation related genes (mecA and fmhb) of S. aureus bacteria.

Author Keywords
Fmhb, S. aureus; Meca; Murraya koenigii; Rt-qpcr; Upregulation

Index Keywords
complementary DNA, Murraya koenigii extract, RNA 16S, tetracycline; agar gel electrophoresis, antibacterial activity, Article, bacterial cell wall, bacterial gene, bacterial gene fmhb, bacterial gene ftsZ, bacterial gene mecA, bacterium culture, bioinformatics, concentration (parameter), controlled study, down regulation, gene amplification, gene expression, gene expression profiling, gene sequence, limit of detection, linear regression analysis, melting temperature, Murraya koenigii, nonhuman, protein expression, real time polymerase chain reaction, RNA analysis, RNA extraction, RNA isolation, Staphylococcus aureus, upregulation

Chemicals/CAS
tetracycline, 23843-90-5, 60-54-8, 64-75-5, 8021-86-1

Tradenames
Real-time PCR system, Applied Biosystems, United States

Manufacturers
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