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Evaluation of the antibacterial and antiviral properties of *Bambusa vulgaris* young shoot extract

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The emergence of multi-drug resistant pathogens is one of the greatest threats to the efficacy of current therapeutics. Phytochemicals present in plants such as alkaloids, flavonoids, glycosides, tannins and triterpenoids have demonstrated promising potentials for the expansion of the range of modern therapeutics against viruses and microorganisms. The objective of the present study was to evaluate the antibacterial and antiviral activities of the fresh juice of *Bambusa vulgaris* (variety *vittata*) young shoots (FJBV) against a group of pathogenic bacteria and Dengue virus (DENV). In this study, the antibacterial activity of the bamboo shoot extract was assessed against Gram-positive and Gram-negative bacteria. According to the results obtained from MTT broth micro dilution assay, *Bacillus subtilis*, *Enterococcus faecalis*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus vulgaris* and *Staphylococcus aureus* showed susceptibility to the fresh juice of bamboo shoot extract. Approximately 125 ml of FJBV was extracted from 400 g of a young bamboo shoot with an approximate height of 1.5 feet. Concentration of 50% (V/V) FJBV was able to kill approximately 90% of the *B. subtilis*, 75% of *E. faecalis* and *E. coli* and 50% of *S. aureus*. *Pseudomonas aeruginosa*, *K. pneumoniae* and *P. vulgaris* showed less susceptibility to 50% (V/V) FJBV. The antiviral activity was evaluated in Vero cells against DENV serotypes 1, 2, 3 and 4. MTT assay was performed to measure the cell viability and cytotoxicity of plant extract. The cell viability was significantly increased (>75% viable cells) in the presence of 50% (V/V) FJBV against DENV serotypes 1 and 4. Our results suggest that FJBV should be considered to develop novel antiviral and antibacterial therapeutics to support disease treatment and management.

Keywords: Bamboo shoot, Dengue virus (DENV), Vero cells, serotype

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