Antibacterial activity of fruit extracts of *Terminalia chebula* and *T. bellerica* against imipenem resistant *Pseudomonas aeruginosa* clinical isolates

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ABSTRACT

Pseudomonas aeruginosa is the most common disease causing species according to Centre for Disease Control and Prevention (CDC). It is associated with major clinical syndromes like pneumonia, cystic fibrosis, external otitis, soft tissue infections in severe burns and swimmer's ear. The drug resistance in *P. aeruginosa* is increasing in nosocomial setup especially through porin loss with AmpC and carbapenemase production. Since Ayurvedic medicine is the alternative choice, this study was aimed at examining the antibacterial activity of aqueous and ethanolic extracts of *Terminalia chebula* and *T. bellerica* fruits against imipenem resistant *P. aeruginosa* clinical isolates. Out of the 26 *P. aeruginosa* isolates collected, 12 were found to be resistant to impenem (MIC: 2 to >32 µg/mL) and were taken for this study. The crude aqueous and ethanolic extracts of *T. chebula* and *T. bellerica* fruits were prepared and reconstituted with 5% dimethylsulfoxide (DMSO). Minimum inhibitory concentration of the extracts was determined by agar dilution method using different concentrations of the fruit extracts. Both the ethanolic fruit extracts showed good antibacterial activity (MIC: 0.8 – 6.25 mg/mL) compared to the aqueous extracts (MIC: 1.6 – 12.5 mg/mL). Among the extracts, *T. chebula* showed better antibacterial activity than *T. bellerica.* Since the treatment options are limited for imipenem resistant *P. aeruginosa,* this can be considered in therapeutic point of view to treat the nosocomial infections caused by them.

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