

The primary objective of this study was to assess the reversal of antibiotic resistance in diverse bacterial strains. A total of five different bacterial strains, namely *Acinetobacter baumannii*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Escherichia coli*, and *Pseudomonas aeruginosa*, were selected to evaluate their susceptibility to seven different antibiotics. These bacterial strains were subjected to treatments with various extracts derived from *Lavandula stoechas*, and changes in resistance levels were observed both before and after the application of the plant extract. For *Pseudomonas aeruginosa*, resistance was observed with six out of seven antibiotics, Nevertheless, when combined with plant extracts, the zone of inhibition expanded to a sensitive range for Ceftriaxone (6 to 25mm), Aztreonam (6 to 37mm), Amikacin (6 to 35mm), Cefoxitin (6 to 28mm), and Piperacillin tazobactam (14 to 18mm) except Clindamycin and Piperacillin tazobactam. In the case of *Klebsiella pneumoniae*, it was observed that resistance was detected in five out of seven antibiotics, including Ciprofloxacin, Erythromycin, Ceftriaxone, Aztreonam, and Cefixime. On the combination with plant extracts, the zone of inhibition exhibited an expansion that reached the sensitive range for Ciprofloxacin(32mm), Erythromycin(15mm), and Aztreonam(22mm). Although there was an increase in the zone size for the remaining antibiotics as well but they remained in resistance range. For *Acinetobacter baumannii*, resistance was evident with five antibiotics. Upon exposure to the plant extract, there was an increase in the zone size; however, it remained within the resistant range. In the case of *E. coli*, resistance was detected against all seven selected antibiotics. However, when treated with plant extracts, there were changes in the zone sizes. The extracts shifted resistance to sensitivity for Amikacin (22 to 30mm) and Polymyxin B (14 to 18mm). Moreover, they induced a shift from resistance to an intermediate range for Ampicillin (6 to 13mm) and cefoxitin (6 to 22mm). In the case of *Staphylococcus aureus*, resistance was observed against all antibiotics. However, the plant extract effectively transitioned the resistance to a sensitive range for Cefoxitin (12mm to 34mm), vancomycin (6 to 17mm), clindamycin (6 to 17mm), ampicillin (10 to 15mm), and Amikacin (10 to 28mm). This study implies that plant extracts can serve as natural agents for reversing antibiotic resistance without any adverse effects on the human body.