

# Pharmacology and Ethnopharmacology

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## Assessment of antibiotic resistance-dissemination from MDR *E. coli* to rat's microbiota by Matrix Assisted Laser Desorption Ionization Time of Flight Mass Spectrophotometry (MALDI TOF-MS)

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The increasing prevalence of multi-drug resistant (MDR) *Escherichia coli* is one of the intractable health obstacles of 21st century. Being a part of intestinal microbiota, *E. coli* could potentially contribute to increasing antimicrobial resistance of gut microbiota (GM). In this study, we aimed to determine the contributing effects of MDR *E. coli* on antimicrobial resistance of GM in rat model. Ten rats, divided in two groups (group-A and group-B), were orally administered ( $1 \times 10^5$  CFU) with MDR *E. coli*. The ingested strain was susceptible to amoxicillin. Group-B was treated with amoxicillin to observe MDR *E. coli* persistence in gut and antimicrobial resistance diversity in GM. The stool samples were aerobically cultured at 37°C. The isolates were screened for resistance against ten different antibiotics and finally identified through MALDI TOF MS and 16S RNA sequencing. Around 8020 colonies were processed. Rat's GM possessed resistance against amoxicillin, D-cycloserin, gentamycin, carbenicillin and kanamycin. The genus *Enterococcus* dominantly inhabited rat's gut. The ingested MDR *E. coli* significantly ( $p=0.01$ ) increase CFU in antibiotics supplemented plates and rose diversity of resistant species. However, the *E. coli* and resistant CFU count declined seven days after administration. *E. coli* could not root permanently and was found to be absent 14 days post-treatment. Amoxicillin successfully treated out ingested MDR *E. coli* and reduced the bacterial load however, the number of resistant species increased in comparison to control. In conclusion, both *E. coli* ingestion and amoxicillin treatment increased resistance in rat's GM. The ingestion of MDR *E. coli* followed by amoxicillin treatment increased resistant CFU and led to emergence of new antimicrobial resistant bacteria.

### Biography

Aymn T Abbas has completed his PhD from Zagazig University. He is Associate Professor of Veterinary Medicine, Special Infectious Agents Unit, King Fahd Medical Research Center, King Abdulaziz University, KSA. He has published more than 25 papers in reputed journals.

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