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Antibacterial Activities of Lactic Acid Bacteria on Potential Multidrug - Resistant Pathogens Isolated from Rabbit

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Abstract : The overuse and abuse of antibiotics in treating zoonotic infections in humans and opportunistic infections in rabbit has contributed to the increase in antimicrobial drug resistance, therefore, an alternative to antibiotics is needed in treating these infections. The study was carried out to determine the antimicrobial activity of lactic acid bacteria (LAB) isolated from rabbit's faeces against multidrug-resistant (MDR) pathogens isolated from the same rabbit. Twelve faecal samples and twelve swabs from fur samples were randomly collected aseptically from apparently healthy rabbits from Ajibode, Ibadan and University of Ibadan research farm in Ibadan, Oyo state, Nigeria. Lactic acid bacteria and multidrug-resistant pathogens were isolated using appropriate agar media and identified by partial sequencing of the 16SrRNA gene. Antibiotic susceptibility pattern of isolated bacteria and LAB were determined by the agar diffusion method. The antibacterial activity of the LAB against the test pathogens was determined using the agar overlay and agar diffusion methods. The pathogens Myroides gitamensis, Citrobacter rodentium, Acinetobacter johnsonii, Enterobacter oryzendophyticus and Serratia marcescens as well as twenty-eight (28) species of LAB belonging to Acetobacter and Lactobacillus genera were identified and characterized. Lactobacillus plantarum had the highest (60.71%) occurrence of the LAB. Viable cells and cell free supernatant (CFS) of isolated LAB inhibited the growth of the test organisms with the largest zone of inhibition (40 mm) produced by Lactobacillus plantarum against Citrobacter rodentium. This study showed that LAB from rabbit possess considerable antibacterial activity against multidrug-resistant bacteria from the same environment.

Keywords : antibacterial activities, cell-free supernatant, lactic acid bacteria; multidrug-resistant pathogens, rabbits' faeces
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