

ANTIBIOTIC RESISTANCE AND PLASMID-ENCODED RESISTANCE DETERMINANTS

S u m m a r y

The increasing antibiotic resistance of bacterial pathogens is an alarming phenomenon of worldwide prevalence. The feasibility with which microorganisms obtain the resistance genes and express novel resistance mechanisms is becoming a serious problem in treatment of many infectious diseases. Selective pressure exerted by the abuse of antibiotics in and outside of human and veterinary medicine, their wide employment in animal husbandry and farming, is one of the main factors driving the dissemination and maintenance of resistance. This article briefly reviews the epidemiology of resistance as well as molecular mechanisms underlying the resistance. Significance of the

phenomenon from the clinical point of view is considered. Types of mechanisms that have evolved for evasion of antimicrobial agent action are characterized. The spread of genetic determinants in the microbial community is described, with special emphasis on plasmid-encoded genes. The ways whereby plasmids capture the resistance genes, whether in the form of gene cassettes, integrons or transposons, and the modes of their transfer, as well as their importance from an epidemiological standpoint are presented. Lastly, this review focuses on various means of circumventing the antibiotic resistance problem.