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Diversified MDR Genes in Bacterial Plasmids and Chromosomes Inactivate Hundred Drugs with huge Superbug Spread in Sea, River and Rain Water

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Abstract

WHO Advocates worldwide action plan promoting research on Phyto-Antibiotics, Gene Medicine and conventional Anti-Microbial to stop superbugs spread. WHO has also recommended controlled use of antibiotic in patients and bans use of excess antibiotics in agricultural land and food animal growth. This is due to fact that antibiotic concentration was increased in water and was promoting new *mdr* gene creation in bacteria and also was activating expression of deadly *mdr* gene like diversified Beta-lactamases. Our study indicated that >40% of sea, river and rain water bacteria were resistant to semi-synthetic antibiotics like ampicillin and amoxicillin. Plasmids carrying *blaNDM1* and b*laKPC* genes are increasing and wonder drug imipenem is becoming useless in few cases and *Mcr-1* gene in *E. coli* plasmids has made colistin drug useless. AacC1/A1 acetyl transferases and AphA4 phospho transferases including *catB3*, *sul1/2* and *strA/B* genes were detected in most plasmids and certain MDR chromosome islands as in *E. coli*, *S. aureus* and *A. baumannii*. *TetA/C, acrAB-TolC, mexAB/CD/EF-oprM,* drug efflux genes were activated. *RpoB,*. *pncA, ponA, penA,* and *rpsL* mutations are involved in multi-resistance in TB and Gonorrhoea. *GyrA/B* or *parC* genes mutations and aac6'-1b-cr gene accumulation were the cause of widespread fluoroquinolones (ciprofloxacin) drug resistance. mtrR, acrR, tetR and ampR types transcriptional regulators have also accumulated in superbug plasmids and are activated by antibiotics increasing superbug sepsis and death. It is thus G-20 Nations in Berlin (May 2017) united for active research on MDR bacteria to stop superbug horror. We found huge MDR bacteria in Ganga River water but *Cassia fistula*, *Suregada multiflora* etc. organic extracts could inhibit the growth of such MDR bacteria in vivo rat model.

Biography

Dr Asit Kumar Chakraborty was performed his PhD at Indian Institute of Chemical Biology, Kolkata and awarded PhD degree in 1990 from the Biochemistry department of Calcutta University. He did postdoctoral work at University of California at Berkeley and visiting scientist at Johns Hopkins University School of Medicine, Presently, he is Senior Research Officer and Associate Professor of Biochemistry at OIST, Vidyasagar University.

References

1. Tortora GJ, Funke BR, Case CL (2016) Microbiology: An Introduction 12th edition, London, England, UK.
2. Chakraborty AK (2016) Multi-drug resistant genes in bacteria and 21st Century problems associated with antibiotic therapy. Biotechnol Ind J 12: 114.
3. McArthur AG, Waglechner N, Nizam F, Yan A, Azad MA, et al. (2013) The Comprehensive Antibiotic Resistance Database. Antimicrob Agents Chemother 57: 3348-3357.
4. Chakraborty AK (2016) Complexity, heterogeneity, 3-D structures and transcriptional activation of multi-drug resistant clinically relevant bacterial beta-lactamases. Trends Biotechnol Open access 2: 1-001.

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