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Dissemination of extending-spectra β -lactamase *E. coli* carrying multidrug resistance and virulence factors in tropical rivers receiving hospital effluents

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E. coli are gastrointestinal inhabitants of warm-blooded animals used as “indicators of microbial quality of surface water”. Beside the apathogenic commensal representatives, certain strains are highly pathogenic. The contamination of drinking and recreational waters by *E. coli* pathotype (i.e. EHEC, STEC, ETEC) are associated with numerous water borne diseases whose symptoms include water diarrhoea, fever, vomiting indeed meningitis. This situation is particularly alarming in developing countries in which the poor water quality continues to pose a serious threat to human health in reason of the broad contamination of freshwater resources by various organic and inorganic pollutants, including antibiotic resistant bacteria and their resistance genes due to the important discharge of untreated urban, industrial and agricultural wastewater. The aim of this research is to assess the role of untreated hospital and urban wastewaters on the biological contamination of urban rivers receiving systems in the city of Kinshasa, Republic Democratic of Congo. 147 *E. coli* strains resistant to 3rd generation of β -lactams (ESBL) were isolated from water samples issued along 5 rivers receiving hospital effluents. They were analysed for their clonality and the carriage of multidrug resistance and virulence genes. The results highlight a high level of clonality in strains (67 clones) and an important level of multidrug resistance regardless the sampling point. 53% of *E. coli* resistant to the 3rd generation of β -lactams were also resistant between 6 to 8 antibiotics. 14% of ESBL producers also carried virulence genes factors linked to *E. coli* pathotype determination. The genes *eaeA*, *ST*, *LT* and *aggR* were carried by 1.3%, 5.4%, 2.7% and 6.8% of the strains. These results indicate the human and environmental potential risk of tropical urban rivers. Indeed, ESBL strains carried by urban rivers are associated to resistance against numerous antibiotic classes and may also carry virulence genes factors. The presence of multi-drug resistant *E. coli* are not intimately linked to untreated hospital wastewater discharge in urban receiving system and are widely distributed along the river, thus highlighting the risk of surface water use.

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