

Analisa escherichia coli resisten antibiotik di instalasi pengolahan air limbah rumah sakit dr Cipto Mangunkusumo = Analysis of antibiotic resistant escherichia coli in wastewater treatment plant in dr Cipto Mangunkusumo hospital

William Koven, author

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Abstrak

[ABSTRAK

Penggunaan antibiotik secara sembarangan telah menyebabkan berkembangnya bakteri resisten antibiotik. Instalasi Pengolahan Air Limbah (IPAL) dicurigai sebagai pusat penyebaran bakteri resisten antibiotik. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh IPAL Rumah Sakit Dr. Cipto Mangunkusumo terhadap resistensi E. coli pada antibiotik Meropenem, Ciprofloxacin, dan Cefixime dengan menggunakan metode Kirby Bauer. IPAL menggunakan lumpur aktif, filtrasi dengan media polistiren, dan klorinasi untuk mengolah air limbah rumah sakit tersebut.

Persen resistensi E. coli terhadap Meropenem, Ciprofloxacin, dan Cefixime adalah 6,25%; 62,13%; dan 62,87%. Di influen IPAL terdapat sebanyak 4.6×10^4 CFU E. coli, dengan persen resistensi Meropenem 3,8%; Ciprofloxacin 53,8%; dan Cefixime 56,3%; sementara efluen IPAL terdapat sebanyak 1.3×10^3 CFU E. coli dengan persen resistensi Meropenem 20%; Ciprofloxacin 60%; dan Cefixime 80%. Disimpulkan bahwa proses di IPAL RSCM meningkatkan jumlah bakteri resisten E. coli. Resisten terhadap Meropenem, yaitu antibiotik kelas Carbapenem yang biasa digunakan untuk melawan bakteri resisten, telah mulai berkembang.

ABSTRACT

The abasement uses of antibiotic have encouraged antibiotic resistant bacteria to develop. Wastewater treatment plant (WWTP) is believed to be the hotspot for the dissemination of antibiotic resistant bacteria. This research is conducted to know the effect of WWTP in Dr. Cipto Mangunkusumo hospital to the resistance profile of E. coli toward three antibiotics, Meropenem, Ciprofloxacin, and Cefixime using Kirby Bauer method. The WWTP apply activated sludge, polystyrene filtration, and chlorination treatment process to treat the hospital wastewater.

Overall, E. coli resistance against Meropenem, Ciprofloxacin, and Cefixime are 6,25%; 62,13%; dan 62,87%. respectively. Raw wastewater has 4.6×10^4 CFU E. coli, with resistance profile Meropenem 3.8%; Ciprofloxacin 53.8%; and Cefixime 56.3%; while treated wastewater has resistance profile Meropenem 20%; Ciprofloxacin 60%; and Cefixime 80% respectively for 1.3×10^3 CFU E. coli. WWTP in Dr. Cipto Mangunkusumo hospital has found to increase the percentage of antibiotic resistant E. coli. E. coli begins to resist Meropenem, the Carbapenem class antibiotic known for its effectiveness in dealing resistant antibiotic. , The abasement uses of antibiotic have encouraged antibiotic resistant bacteria to develop. Wastewater treatment plant (WWTP) is believed to be the hotspot for the dissemination of antibiotic resistant bacteria. This research is conducted to know the effect of WWTP in Dr. Cipto Mangunkusumo hospital to the resistance profile of E. coli toward three antibiotics, Meropenem, Ciprofloxacin, and Cefixime using Kirby Bauer method. The WWTP apply activated sludge, polystyrene filtration, and chlorination treatment process

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