

ABSTRAK

Pengolahan Air limbah domestik kini semakin ketat, parameter total coliform menjadi parameter baru dalam pengolahan air limbah di Indonesia, disinfeksi menjadi proses yang penting untuk menghilangkan total coliform. Kajian ini bertujuan menyiapkan teknologi disinfeksi pada pengolahan air limbah domestik menggunakan media berupa Luffa cylindrica yang dilapisi dengan nanopartikel perak-graphene oxide (AgGO), mengetahui karakteristiknya, beserta kinerjanya. Dalam pelaksanaan penelitian ini media disinfeksi yang digunakan adalah Luffa cylindrica. Scanning Electron Microscopy (SEM) dan Spektrofotometri UV-Vis digunakan untuk mengetahui karakteristik media disinfeksi, reaktor skala pilot digunakan untuk menguji kinerja media disinfeksi, metode Most Probable Number (MPN) dan Log Removal Value (LRV) digunakan untuk mengetahui kinerja media disinfeksi secara kuantitatif. Sampel limbah yang digunakan berasal dari Instalasi Pengolahan Air Limbah Komunal Mendi, Yogyakarta. Berdasarkan hasil penelitian menunjukkan kemampuan removal bakteri coliform Luffa cylindrica berlapis AgGO mencapai 99% dengan LRV 2,6.

Kata Kunci: AgGO, Disinfeksi, Luffa cylindrica, Total Coliform

ABSTRACT

*Domestic wastewater treatment is now getting tighter, the total coliform parameters are becoming a new parameter in wastewater treatment in Indonesia, disinfection is an important process to eliminate total coliform. This study aims to prepare disinfection technology for domestic wastewater treatment using media in the form of *Luffa cylindrica* coated with silver-graphene oxide (AgGO) nanoparticles, knowing their characteristics, and their performance. In the implementation of this research the disinfection media used was *Luffa cylindrica*. Scanning Electron Microscopy (SEM) and UV-Vis Spectrophotometry were used to determine the characteristics of disinfection media, pilot scale reactors were used to test the performance of disinfection media, Most Probable Number (MPN) and Log Removal Value (LRV) methods were used to determine the performance of quantitative disinfection media. Wastewater samples used are from Mendiwo Communal Wastewater Treatment Plant, Yogyakarta. Based on the results of the study showed that removal ability of coliform bacteria of *Luffa cylindrica* coated AgGO was 99% with an LRV of 2.6.*

Keywords: *AgGO, Disinfection, *Luffa cylindrica*, Total Coliform*