

Investigating the Effectiveness of Mycofiltration in Treating Greywater Generated at Uva Wellassa University for Recycling Purposes

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Greywater is the waste-water from domestic activities. It is used water of kitchen, bathroom and laundry activities which represents least polluted contaminants as it consists of organic and inorganic contaminants, nitrogen and phosphorus derivatives, oil, food particles and fats. Mycofiltration is one of the bioremediation techniques in which fungus is used for treatment of greywater. Daily 720 000 L of greywater is generated at Uva Wellassa University (UWU). However, this wastewater is discharged into drainage without any proper treatment. This study was therefore taken to treat greywater generated at UWU using myco filters and to investigate their effectiveness for recycling purposes. Greywater samples were collected in sterilized plastic containers and initial physico-chemical parameters such as pH, BOD, COD, nitrogen, total suspended solids (TSS), alkalinity, turbidity, conductivity, total dissolved solids (TDS) and colour were analyzed using the standard methods. Mycofiltration was performed using two different fungi namely *Aspergillus niger* and *Pleurotus ostreatus* in two different permeated substrates namely rice and saw dust. Greywater samples was allowed to pass through four different types of myco filters. Physico-chemical parameters of filtered water were analyzed again. pH, BOD, COD, nitrogen, TSS, and alkalinity parameter values have been reduced from the initial value and turbidity, conductivity, TDS and colour parameter value have been increased from the initial value. Removal efficiency from *Aspergillus niger* for both permeated substrates rice and sawdust were 43.76% & 35.92%. Removal efficiency from *Pleurotus ostreatus* for both permeated substrates rice and sawdust was 34.52% & 26.80%. Therefore, *Aspergillus niger* in rice media was chosen as the effective fungi in reducing contaminants present in greywater. Furthermore, the quality of *Aspergillus niger* in rice media filtrated water sample was compared with the standard permissible level for outdoor gardening given by Central Environmental Authority standards. Major parameters of *Aspergillus niger* in rice media filtrated water were below the permissible level. Hence, it was concluded that the greywater filtered through *Aspergillus niger* in rice media can be reused for outdoor gardening. However, this removal efficiency could be further increased by the use of bio coagulants along with myco filters in future.

Keywords: Greywater; Mycofiltration; *Aspergillus niger*; *Pleurotus ostreatus*; Reuse