

Distribution and Probable Sources of Faecal Indicator Bacteria along Rawan-Oya Tributary of Mahaweli River in Kandy District

R.W.M.G.K. Kapukotuwa^{1*}, C.L. Abayasekara², K.C. Weerakoon⁴ and R.S. Rajakaruna³

¹*Postgraduate Institute of Science*

²*Department of Botany, Faculty of Science*

³*Department of Zoology, Faculty of Science*

University of Peradeniya, Peradeniya, 20400, Sri Lanka

⁴*Department of Zoology, The Open University of Sri Lanka,*

Nugegoda 10250, Sri Lanka

**kapukotuwag@gmail.com*

Faecal indicator bacteria (FIB) count reflects the level of faecal contamination of water. This study investigated faecal contamination levels along the Rawan-Oya tributary of Mahaweli River by analysing the total-coliform (TC), faecal-coliform (FC), *Escherichia coli* and faecal-streptococci (FS) levels. Water samples (1 L) were collected monthly from five different habitats: pristine, rural, agricultural, urban and semi-urban areas from June 2020 to January 2021. Subsequently, water was filtered through membrane-filters (0.45µm pore-size), and placed on Petri-dishes, containing M-Endo, M-FC and KF-streptococcus agar. M-Endo and M-FC plates were incubated for 36 hr at 35 °C and at 44.5 °C, respectively. KF-streptococcus agar plates were incubated for 48 hr at 35 °C. Confirmation tests were performed using brilliant-green bile broth for TC and FC, Indole test was done for *E. coli*. FS was confirmed by the growth in BHI broth and the colour change of BEA slant. Sources of FIB were analysed using FC: FS ratio. The lowest mean values cfu/100 mL were noted in the pristine area: TC 270 (±20), FC 16 (±1) FS 196 (±3) and the highest values were obtained from the Madawala urban site: TC 209,000 (±7,000), FC 22100 (±100), FS 96,500 (±2,500). There were significant differences in the distribution of TC, FC and FS counts among the five habitats (ANOVA, $p < 0.05$). The source of contamination in the pristine area was mainly wild animals (FC:FS= 0.07) and in all other sites, it was domestic animals (FC:FS= 0.1– 4.0). A public toilet on the river-bank and disposing animal wastes into the stream from meat-shops at the Madawala site may have had a significant contribution to the increased FIB counts. The results indicated that the distribution of FIB varied among the sites and the sources were related to the anthropogenic interventions, and the domestic animal density of the area.

Keywords: Faecal indicator bacteria, Coliforms, Faecal-streptococcus, River water, Pollution

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