

Isolation and Identification of *Mycobacterium* in Soil and Water

K. W. A. M. Kokila¹ and D. N. Magana Arachchi²

¹Uva Wellassa University, Sri Lanka
²Institute of Fundamental Studies, Kandy

Mycobacteria were one of the first types of bacteria recognized to cause disease. The genus *Mycobacterium* is the only genus in the family Mycobacteriaceae. *Mycobacteria* are aerobic, non sporeforming, nonmotile, slightly curved or straight rods, which may branch. Colony morphology varies among the species, ranging from smooth to rough and from none pigmented to pigment. Non-tuberculous mycobacteria (NTM) comprise a variety of acid-fast bacilli species. They encompass, all mycobacterial species other than *Mycobacterium tuberculosis* complex (MTC) and *Mycobacterium leprae*. In Runyon's classification, mycobacteria, excluding those in the *M. tuberculosis* complex and noncultivable taxa (e.g., *M. leprae*), were divided into four groups based on growth rates and pigmentation properties. NTM are ubiquitous in nature and found as free living saprophytes in various environmental habitats especially in soil, dust, bio-films and water, including water from tanks, sewage, rivers and sea. NTM are generally found in the environment as free-living organisms, but many are also known as opportunistic human pathogens. In this study, the collected water and soil samples were processed and inoculated onto Lowenstein-Jensen media and the growth was observed in 28°C and 37°C in Dark ' & light conditions. Growth in different temperatures, culture conditions, acid fastness, colony morphology and color, were used in tentative identification to the species level. *Mycobacterium* species were widely distributed in soil and water and *M.aichiense*, *M.smegmatis* and *M.fortuitum* were common in both soil and water. Different Temperatures did not affect the growth of *M.smegmatis*, *M.wolinsky*, *M. farcinogenes*, *M.fortuitum* and *M.poriferae* while *M.hibemiae*, *M.heidelbergense* and *M. kubicæ* produced pigments in light. *M.poriferae* a species previously isolated only from a marine sponge was able to isolate from a soil sample collected from coastal area which was affected by tsunami waves. *M.intermedium* grew on LJ and this is a specific species to hot tubs and hot showers.

Key words: *Mycobacterium*, Acid fast staining, Lowenstein-Jensen medium