ABSTRACT

Bioaerosol is microorganisms with their size of 0,02-100 µm in the air. Humans do a lot of activities in the room, so the indoor air quality is importan factor that must be consider. Bioaerosol formed of bacteri, viruses, fungi and allergance such as dust parasites that can be sourced from dead carcasses and dust mites. The impact on health mainly in the form of irritation, infection, and allergance. This study aims to identify and determine the relationship of non-bilogical parameters (RH, T, CO₂, PM_{2.5}) to biological parameter in the form of bacterial colony forming unit per volume (CFU/m³). Location where the air sampled was taken in three places of Gedung Deli, Universitas Telkom, Bandung. Biological sampling mechanism at each location was carried out in parallel with nonbiological parameters in parallel during campus operational hours, each for two minutes with three repetition using the Standard SKC BioStage 400 holes with natrium agar Trypticase Soy Agar on a petri dish. Then the sample was identified and counted for total colonies using colony counter. These bacteria were identified by enrichment media using Trypticase Soy Broth and Blood Agar 5%, then gram cheking was perfomed, after which diferential media were used Manitol Salt Agar and MacConekey Agar. The linear regression model shows that there were good correlation with RH, T, and CO2 parameters with bioaerosol concentration. This is due to the fact that most of the bacteria in the air attach to or attach to the aerosols produced by the evaporation process. Weak correlations at PM2.5 can be caused by bacteria in the air standing as aggregates or sticking to non-biological particles, so the size is> 2.5 µm. The mean concentration of bioaerosol in rooms 1, 2 and 3 was 5583 CFU / m³, 1890 CFU / m³, and 1278 CFU / m³. This does not meet the quality requirements for air biology in indoor rooms.

Keywords: Bioaerosol, indoor air quality, airborne bacteria