

4. CONCLUSION AND SUGGESTIONS

4.1. Conclusion

The ability to perform biofilm consider as the most important factor in biodegradation process, because it will support the enzymatic metabolism at the polyethylene surface. Another supportive factors were environmental condition, growth media, nutrition, and incubation time, which will affecting the result of biodegradation process. The best condition to do a biodegradation process is in the controlled laboratory condition, because the stability of growth environment and nutrition will generally improve the microorganism's ability to degrade the polyethylene material. The combination of the right microorganisms in the consortium will improving the biodegradation process.

Biodegradation rate can be analyzed by several methods, *i.e.*, visual observation, weight loss of polymer, and clear zone observation; until the harder methods such as the Sturm test, quantification of biofilm, and bacterial biomass, FTIR observation, and GC-MS analysis.

4.2. Suggestions

Further study is needed to determine which microbial genera that have high potential to perform a significant biodegradation rate of polyethylene and the other types of plastic packaging. The important aspect that needs to maintain on this research is the same environment and factors for all groups of bacteria, fungi, and actinomycetes that are used in the study.