

Development of Bio-fermented Cleaning Agent of Fruit Peels Residues

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1. Introduction

Normally, the developed countries have a lot of waste, it makes by human. The waste generated in community is organic solid waste. Increasing of organic waste is increased according to consumer demand such as vegetables and fruits left over from the community. This research focused on increasing the value of fruit peels residues to production by cleaning agent as environmentally friendly products, which is approaches to environmental management in community and creating innovations from waste materials for sustainable development.

2. Methodology

The study on properties of the fruit peels residues such as the lemon, pineapple and grapefruit peel to development into bio-fermented for cleaning agent product and assess the effectiveness of the cleaning agent by standard plate count, swab method.

3. Results & Discussion

The development of bio-fermented cleaning agent of fruit peels residues, study on 3 type of fruit peels; the pineapple grapefruit and lemon peel. Result was found that pineapple peel shows the best treatment for bio-fermented cleaning agent, its good physical characteristics, milky white color, sour aroma of the fruit, and can be biodegradable. The pH, conductivity and the efficiency of the removal of stains of pineapple peel were 3.92 ± 0.42 , 152.19 ± 6.53 , and 91.78%, respectively. Next, grapefruit peel shows brownish yellow colour, sour

scent and partially degradable. The pH and conductivity were showed 3.65 ± 0.38 and 134.74 ± 2.17 $\mu\text{S/cm}$. The efficiency of removing stains of grapefruit peel shows 89.28%. Finally, lemon peel had light green colour, it's floating ceiling on the top and the least effective. The pH, conductivity and the efficiency of the removal of stains of lemon peel were showed 3.63 ± 0.31 , 149.60 ± 3.20 $\mu\text{S/cm}$ and 79.10%, respectively. Pineapple peel shows the best fruit peels residues due to pineapple peel has bromelain enzyme of decomposition proteins, reduce odor, eliminate fat stains, and can kill germs more than grapefruit and lemon peels.

4. Conclusion

In summary, Efficiency of the removal of stains of the pineapple grapefruit and lemon peel show 91.78%, 89.28% and 79.10%, respectively. The pineapple shows the best fruit peels residues to development of bio-fermented cleaning agent.

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References

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