

Study on the Production and Purification of Pullulan from Local Isolate of *Aureobasidium pullulans* Using Tapioca Waste as a Substrate

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Pullulan is a neutral extracellular polysaccharide synthesized by yeast like fungus *Aureobasidium pullulans* using carbon substrates such as sucrose, glucose and maltose. The unique structure and physicochemical properties of pullulan form the basis for a wide range of potential application such as biodegradable film and food packagings with properties similar to synthetic polymer, low calorie food, and industrial application (adhesives, flocculating agents, etc.).

Production of pullulan using local isolate of *Aureobasidium pullulans* AIB1 was carried out in a batch 20 litres stirred bioreactor. Tapioca waste hydrolizate originated from enzymatic hydrolysis was used as a sole carbon source. The research shown that the highest yield of pullulan was 5.54 g/l; while the highest yield of biomass was 12.0 g/l, achieved at 6 days fermentation. The fermentation kinetics determination resulted that the highest value of parameter kinetics as follows: $Y^s = 0.196$, $Y_{p/s} = 0.146$, and $d_{s/s} = 0.988$. Theoritically, the power consumption per unit volume (P_g/V) was 0.104 HP/m³ and coefficient transfer oxygen (K_{La}) was 4.842×10^{-2} kg.mol.O₂/m³.h.atm.

A. pullulan is one among the "black yeast" group, and pullulan contamination by melanin is a commonly encountered problem. Based on the whiteness of pullulan, the best treatment on purification was resulted by treatment with 2.0% bentonite at temperature of 60°C.