Microbial Alkaline Protease from Animal Waste: Immobilization and Characterization

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***Abstract*—** Alkaline protease (AP) produced from protein-rich animal waste as chicken feather (CF) and fish fin (FF) by mixed culture was immobilized and characterized. The immobilized enzyme activity obtained in 0.25g beads was 0.398 and 0.411 (U/mL) for CF and FF respectively. Besides; the initial activity was 0.424±0.011 and 0.417±0.017 (U/mL) from the extracted protein, accordingly. While enzyme activity entrapped in 0.25g beads was 0.081 and 0.151 (U/ml), respectively. The beads protein content at 4 cycles up to 0.171±0.001 and 0.176±0.006 (mg/ml), respectively and gradually decreased through the second run by approximately 10% and ended up with 40% activity loss 0.124±0.002 and 0.112±0.003 (mg/ml) accordingly. The enzyme showed zero % activity loss for the first cycle and gradually decreased along the fourth cycle. The storage stability of the enzyme was recorded at 1st day 0.424 ± 0.011 and 0.417 ± 0.017 (U/mL) as the initial activity of AP, respectively, while the activity for the 5th day 0.167 ± 0.004 and 0.167 ± 0.003 (U/mL) were used as the final activity of the immobilized and free enzymes, respectively.

***Index Terms*— Immobilization, protein containing waste, alkaline protease, mixed culture, animal waste.**