

EFISIENSI BIOKONVERSI ROTI KADALUARSA OLEH LARVA LALAT TENTARA HITAM (*Hermetia illucens* L.)

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ABSTRAK

Permasalahan volume sampah sisa makanan di Kota Bandung semakin memprihatinkan tiap tahunnya. Salah satu sisa makanan yang sering ditemukan adalah roti kadaluarsa. Penumpukkan sisa makanan roti kadaluarsa yang semakin banyak dapat mengakibatkan pencemaran terhadap lingkungan. Oleh sebab itu, perlu upaya pengolahan sisa makanan yang efektif. Larva lalat tentara hitam (*Black Soldier Fly*) mempunyai kemampuan untuk mereduksi sampah organik (sisa makanan) dan diubah menjadi biomassa yang dapat dicerna oleh tubuhnya. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian roti kadaluarsa terhadap pertumbuhan, perkembangan, mortalitas dan efisiensi konversi larva BSF. Penelitian ini terdiri dari tiga perlakuan dan empat kali pengulangan. Perlakuan yang diberikan adalah control (pakan ayam), roti kadaluarsa dan roti kadaluarsa yang difermentasi EM4. Pengamatan dilakukan tiap tiga hari sekali hingga larva berubah 50% menjadi prepupa. Parameter pengamatan yang diamati meliputi bobot biomassa, Panjang larva, berat, indeks pengurangan limbah (WRI/*Waste Reduction Index*), efisiensi konversi pakan yang dicerna (ECD/*Efficiency of digested feed*) dan mortalitas BSF. Hasil dari penelitian menunjukkan nilai biomassa BSF tertinggi terdapat pada perlakuan roti kadaluarsa fermentasi (RKF) 17,13 mg, nilai indeks reduksi limbah terdapat pada pakan ayam (K) sebesar 3,06% dan nilai efisiensi konversi pakan yang dicerna (ECD) terdapat pada roti kadaluarsa fermentasi (RKF) sebesar 32,40%. Berdasarkan penelitian ini kualitas terbaik pada pakan yang mudah dicerna terdapat pada perlakuan roti kadaluarsa fermentasi (RF) sehingga dapat disimpulkan bahwa larva BSF mampu mengkonversi sisa makanan roti kadaluarsa fermentasi hal tersebut yang dapat dilihat dari angka pertumbuhan, perkembangan dan efisiensi konversi yang lebih optimal.

Kata kunci: biokonversi, ECD, lalat tentara hitam, roti kadaluarsa, WRI

BIOCONVERSION EFFICIENCY OF EXPIRED BREAD BY BLACK SOLDIER FLY LARVAE (*Hermetia illucens* L.)

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ABSTRACT

The problem of food waste volume in Indonesia is increasingly concerning every year. One of the food wastes that is often found is expired bread. The accumulation of expired bread waste that is increasingly large can cause environmental pollution. Therefore, it is necessary to make effective food waste processing efforts. Black Soldier Fly (BSF) larvae have the ability to reduce organic waste (food waste) and convert it into biomass that can be digested by their bodies. This study aims to determine the effect of expired bread on growth, development, mortality and conversion efficiency. This study consisted of three treatments and four repetitions. The treatments given were control (chicken feed), expired bread and expired bread fermented with EM4. Observations were carried out every three days until the larvae changed 50% into prepupae. The observed parameters included biomass weight, larval length, weight, waste reduction index (WRI/Waste Reduction Index), efficiency of digested feed conversion (ECD/Efficiency of digested feed) and BSF mortality. The results of the study showed that the highest BSF biomass value was found in the fermented expired bread (RF) treatment of 17.13 mg, the waste reduction index value was found in chicken feed (K) of 3.06% and the digested feed conversion efficiency (ECD) value was found in the fermented expired bread (RKF) of 32.40%. Based on this study, the best quality of easily digestible feed was found in the fermented expired bread (RF) treatment so it can be concluded that BSF larvae are able to convert fermented expired bread leftovers, which can be seen from the growth figures, development and conversion efficiency which are more optimal.

Keyword: bioconversion, black soldier fly, ECD, expired bread, WRI