

PEMBUATAN EFEKTIF MIKROORGANISME (EM) BERBASIS
BUAH-BUAHAN DAN SAYUR-SAYURAN DALAM
PENGOLAHAN LIMBAH CAIR TAHU

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ABSTRAK

Limbah cair tahu terdiri atas protein, karbohidrat, lemak, H₂S, CO₂, CH₄ dan NH₃ yang membahayakan kehidupan biota perairan. Limbah cair tahu memiliki nilai BOD, COD, dan amonia yang tinggi dan pH asam melebihi standar baku mutu. Kandungan BOD dan COD yang tinggi mengakibatkan kematian organisme karena kekurangan oksigen. Pengolahan limbah tahu dapat dilakukan dengan menambahkan mikroorganisme untuk mendegradasi bahan organik agar standar baku mutu dapat terpenuhi. Mikroorganisme yang mampu mendegradasi limbah cair tahu tergolong dalam bakteri asam laktat dan berada di buah-buahan dan sayur-sayuran. Mikroorganisme dibuat dalam kultur campuran berisi berbagai macam mikroorganisme yang disebut efektif mikroorganisme (EM). EM dibuat dengan mencampurkan buah dan sayur dengan gula pasir dan air kelapa dimana selanjutnya difermentasi selama 8 hari. EM dicampurkan dengan limbah pada volume 10 ml, 15 ml, 20 ml, 25 ml dan diinkubasi selama 5 hari. Parameter berupa BOD, COD, amonia, dan pH diukur sebelum diinkubasi dan setelah diinkubasi setelah 5 hari. Jumlah bakteri yang tumbuh juga dihitung sebelum dan sesudah inkubasi dengan metode ALT. Hasil menunjukkan bahwa volume penambahan EM 25 ml adalah yang terbaik karena menurunkan nilai BOD, amonia, pH sebesar 60.44 % ; 94.939 % ; 1.13 % namun meningkatkan nilai COD sebesar 1.13 %.

Kata kunci : limbah cair tahu, efektif mikroorganisme, baku mutu

FRUITS AND VEGETABLE BASED EFFECTIVE
MICROORGANISMS (EM) PRODUCTION IN TOFU LIQUID
WASTE TREATMENT

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ABSTRACT

Tofu liquid waste consists of proteins, carbohydrates, fats, H₂S, CO₂, CH₄ and NH₃ which endanger the life of aquatic biota. Tofu liquid waste has high BOD, COD, and ammonia and acidic pH exceeding standards. The high content of BOD and COD causes organisms to die due to lack of oxygen. Tofu waste processing can be done by adding microorganisms to degrade organic matter so that standards can be met. Microorganisms that are able to degrade tofu liquid waste belong to lactic acid bacteria and are found in fruits and vegetables. Microorganisms created in mixed cultures containing various kinds of microorganisms are called effective microorganisms (EM). EM is made by mixing fruits and vegetables with sugar and coconut water which are fermented for 8 days. EM was mixed with waste at volume of 10 ml, 15 ml, 20 ml, 25 ml and incubated for 5 days. Parameters such as BOD, COD, ammonia, and pH were measured before and after incubation for 5 days. The number of coliform was also counted before and after incubation with TPC method. The results showed that addition volume of 25 ml of EM was the best because it lowered the value of BOD, ammonia, pH by 60.44%; 94.939%; 1.13% but increased the COD value by 1.13%.

Keywords: tofu liquid waste, effective microorganism, quality standard