

ABSTRACT

The pollution and contamination of soil from chemical fertilizer is one of the major problems for agricultural industry. The use of fertilizer is now tended to focus on biofertilizer because it enriches the nutrient quality of soil. Worm tea is one kind of biofertilizer made from vermicompost which is the product of composting using various worms to create a heterogeneous mixture of decomposing vegetable or food waste, bedding materials, and worm casting. In this experiment, the physicochemical properties of commercial worm tea, effect of processing conditions on quality of worm tea, and an effect of storage time on worm tea products have been studied. For producing worm tea, a bag of vermicompost (1100 g) was soaked in water (22 liters) over 48 hours by three different conditions. There are samples without addition of air and molasses (sample A), without addition of air but addition of molasses (sample B), and with addition of air and molasses (sample C). The sample was collected after 2 and 16 days of processing. After 16 days, samples was then stored for 30 days. The sampling was done at day 10, 17, and 30 of storage. The analysis of physicochemical properties and microbiological effects were done. The results revealed that all samples from three processing methods showed the same total nitrogen content (0.0176%). Interestingly, samples collected from day 16 showed higher amount of % total phosphorus (P) and potassium (K) than those from day 2. Also, sample B gave the highest % total P and K. As results, the value of %OC, %OM, and C/N ratio for sample at day 2 induced higher than those from day 16. Among all, sample C showed the highest %OC, %OM, and C/N ratio. For aerobic plate count, sample A and B at day 16 showed the highest number of microbial loads (3×10^7 CFU/ml). For anaerobic plate count, sample B showed the highest number at day 10 of storage (2.69×10^7 CFU/ml). All samples showed very low numbers of *Bacillus* sp. and mold. During storage, the numbers of aerobic and anaerobic plate count decreased over time. However, GI which showed the efficiency of fertilizer ability to germinate plant, showed no significant difference among the day of storage. This indicated that the worm tea produced from this experiment can be kept for at least 30 days long. Above all, all three samples (A, B and C) gave dramatically higher GI than the commercial worm tea.