

Title: Detection and enumeration of total coliforms and *Escherichia coli* in compost from small-scale domestic composter

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Abstract:

Home composting of organic waste was evaluated for 160 days in the Laboratory of Solid Wastes and Effluents at Federal University of Bahia, Brazil. The experiment was performed in duplicate using plastic containers of low cost (approximately U\$ 7.00) readily available in shops and supermarkets. The working volume was equal to 10.0 liters. The residue was comprised by food waste and bulking agent (sawdust), always in a ratio of 7: 3 (w/w) respectively. The food waste consisted of vegetables, fruits and eggshells. The process was divided into three stages, with different operational times: 63, 42 and 55 days, respectively. After each stage, the compost was characterized for the presence of total coliforms and *E. coli* using defined substrate technology. For this purpose, Colilert-18™/Quanti-Tray™/2000 kit from IDEXX was adapted for use with compost samples. An amount equivalent to 1 gram of total solids (TS) was weighed, mixed with 99 ml of dilution water and submitted to 30 minutes of stirring on magnetic stirrer. Thereafter, serial dilution was made up to 10⁻⁹. Each dilution was reacted with Colilert™ and incubated in Quanti-Tray™ for 24 hours at 35°C. The result was analyzed in dark chamber with 365-nm UV light using Quanti-Tray™ Most Probable Number (MPN) table. The results for total coliforms were 760, 2900 and 3800 MPN/g_{TS} in the final compost of stages 1, 2 and 3, respectively. The results for *E. coli* were 4, 1900 and 250 MPN/g_{TS} in the final compost of stages 1, 2 and 3, respectively. Only the MPN of thermotolerant coliforms is established and regulated by CONAMA in Resolution 375/2006. According to this resolution, the maximum is 1000 MPN/g_{TS}. Only the compost resulting from stage 2 (with shorter duration) does not attend the quality required for agricultural use. These results indicate that composting time is an important factor for the disappearance of pathogenic microbial communities.

Key words: compost quality, *Escherichia coli*, organic food waste, total coliforms

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