Title: Evaluation of microbial contaminants in Hortbio® biofertilizer

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Abstract: Some alternative agricultural practices have been implemented to reduce the use of external-inputs. The use of biofertilizer may be a promising alternative. Biofertilizers have been proven to be effective in promoting plant growth and reducing pathogens attack since they incorporate organic matter and nutrients into soil. This study aimed to assess the microbial contamination in Hortbio®, biofertilizer developed by Embrapa Vegetables. Experiments were carried out at the Food Hygiene Laboratory, University of Brasilia, following the recommendations of Ministry of Agriculture Normative Instruction IN-27, June 5, 2006. According to IN-27, the maximum limit of pathogens for biofertilizers is 1,000 MPN g^{-1} for thermotolerant coliforms and no *Salmonella* spp. in 25 g sample. Hortbio® was prepared five independent times. Samples from these five replicates were collected for microbiological analyses 10 days after preparation. Each replicate was done by triplicate. Thermotolerant coliforms and *Salmonella* spp. analyses were performed according to American Public Health Association (APHA) and Bacteriological Analytical Manual (Food and Drug Administration - FDA), respectively. In 25 g sample of each triplicate was added 225 mL of peptone water for thermotolerant coliforms and lactose broth for *Salmonella* essays. A serial dilution was done from 10^{-1} to 10^{-3}. For thermotolerant coliforms analyses, lauryl sulfate tryptose broth was used as a presumptive test and EC broth as a confirmatory test. The count was done by Most Probable Number (MPN) method. For *Salmonella*, after pre-enrichment, selective enrichment was done with tetrathionate broth and modified Rappaport-Vassiliadis broth. Afterwards, *Salmonella* sp. was determined by spread plating on Hektoen enteric agar, bismuth sulfite agar and xylose lysine deoxycholate agar. No typical colony-forming units of *Salmonella* were identified. Counts found for thermotolerant coliforms were 11.3 MPN g^{-1} in one of the replicates and lower than 3.0 MPN g^{-1} in the other four replicates. *Salmonella* sp. was not detected in any of Hortbio® samples. The microbiological tests carried out on Hortbio® revealed that the product is in satisfactory condition and in accordance with the maximum limits of pathogens established by legislation for production and commerce of biofertilizers.

Keywords: biofertilizer, thermotolerant coliforms, *Salmonella* sp.

Funding agency: EMBRAPA - Brazilian Agricultural Research Corporation