

TITLE: RELATIONSHIP BETWEEN FARMING PRACTICES AND MICROBIOLOGICAL QUALITY OF ORGANIC LETTUCE (*Lactuca sativa* L.) GROWN IN SAO PAULO, BRAZIL

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ABSTRACT

Fresh produce is an important dietary component since it provides essential nutrients, such as vitamins, minerals and fibers, and many health benefits. Over the last decades, the demand of organic products appears to have expanded quickly in consequence of the seek for food without chemical residues. However, organic farming practices such as the use of animal manure and inadequate methods of composting can increase the risk of contamination by enteric pathogens, such as *Salmonella* spp. and pathogenic *Escherichia coli*. The aim of this study was to report results on the quality and safety of organic lettuce samples (*Lactuca sativa* L.) collected in seven selected certified farms located in Sao Paulo, Brazil. Among the visited farms, six use manure from chickens and one uses manure from pigs as fertilizer. A total of 140 samples of different lettuce varieties were collected and submitted to enumeration of total coliforms and *E. coli* using standard MPN method. Samples were also tested for *Salmonella* spp. according to ISO 6579:2002 method. The average count of total coliforms was 2.9 ± 0.4 log MPN/g and *E. coli* was detected in 52 (37%) samples (average 1.1 ± 0.6 log MPN/g). None of the samples was positive for *Salmonella* spp. in 25 g. It was not observed significant difference ($p < 0.05$) between the microbial counts of total coliforms and *E. coli* for lettuce samples grown in soils fertilized with chicken and pig manure. Overall, most samples presented good microbiological quality and were in accordance with the current limits established by the Brazilian Surveillance Agency for fresh vegetables (< 2 log MPN/g for thermotolerant coliforms and absence of *Salmonella* spp./25 g), except for two samples of butterhead lettuce fertilized with chicken manure, in which *E. coli* was ≥ 3.0 log MPN/g.

Keywords: organic agriculture; microbiological quality; produce; *E. coli*; *Salmonella* spp.

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