TITLE: ASSESSING THE MICROBIOLOGICAL QUALITY AND SAFETY OF LETTUCE (*Lactuca sativa* L.) PRODUCED UNDER ORGANIC PRACTICES IN SÃO PAULO, BRAZIL

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ABSTRACT:

Organic consumption has increased over the last decades in Brazil and other countries due to its association with a healthier diet. However, surveillance data in several countries point out an increasing association of vegetable consumption with foodborne outbreaks caused by pathogenic microorganisms. Organic practices, such as the use of animal manure and inadequate composting, may promote contamination by enteric microorganisms such as *Salmonella* spp., increasing health risks for the consumer. This study aimed to assess the microbiological quality and safety of organic lettuce samples collected in four certified farms located in São Paulo, Brazil, by detection of *Salmonella* spp. and enumeration of *Enterobacteriaceae*. Lettuce samples were collected from the field (n=20) and after washing step at the farms (n=20). Fertilizers (n=12), irrigation (n=8) and washing water (n=8) from these farms were also analyzed for these microorganisms. *Salmonella* spp. was investigated using the method ISO 6579:2002 for lettuce and fertilizers and the method ISO 19250:2010 was used for water samples. *Enterobacteriaceae* was enumerated by plating on VRBG Agar. None of the samples analyzed was positive for *Salmonella* spp. (absence in 25 g or 100 mL). *Enterobacteriaceae* counts ranged from 4.2 to 6.4 log CFU/g for fertilizers, from 3.8 to 4.8 log CFU/g for lettuces from the field, from 2.8 to 4.0 log CFU/g for washed lettuces, from <1 to 2.3 log CFU/mL for irrigation water and was <1 log CFU/g for water from the washing tanks. The washing step caused a reduction of ~1.2 log on the counts of *Enterobacteriaceae* in the lettuce samples. Although *Salmonella* spp. was not isolated from the analyzed samples, the great population of *Enterobacteriaceae* obtained, mainly on washed lettuce, indicates a poor microbiological quality.

Keywords: organic agriculture; produce; *Salmonella* spp.; *Enterobacteriaceae*.

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