Title: Biosurfactant produced by *Salmonella* Enteritidis SE86 can **increase the adherence and resistance to sanitizers on lettuce leaves** (*Lactuca sativa* L., *cichoraceae*)

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Abstract:

Salmonella Enteritidis SE86 is an important foodborne pathogen in Southern Brazil and it is able to produce biosurfactants. However, the importance of this compound for the microorganism is still unknown. This study aimed to investigate the influence of biosurfactant production in pathogen adherence, it is and resistance to sanitizers when *S*. Enteritidis SE86 is on lettuce leaves. First, *S*. Enteritidis SE86 was inoculated in lettuce leaves to determine the amount of biosurfactant being produced. Subsequently, *S*. Enteritidis SE86 was inoculated, with and without the biosurfactant, into lettuce leaves and the adherence and bacterial resistance to different methods of washing and disinfecting vegetables were tested. The results showed that *S*. Enteritidis SE86 produced biosurfactants 16 hours after it was set on the lettuce leaves, presenting emulsification index ranging from 11% to 52.15%. In cases where biosurfactant were present, the food pathogen showed greater resistance to all treatments investigated and the adherence was increased, as well. The scanning electron microscopy demonstrated that *S*. Enteritidis was able to adhere and invade the lettuce leaves stomata, what was not observed without the presence of biosurfactants. Results indicated that the biosurfactant produced by *S*. Enteritidis SE86 contributed to the adherence and increased the resistance to sanitizers when the microorganism is present on lettuce leaves.

Keywords: Lettuce, Microbial adherence and resistance, *Salmonella* Enteritidis SE86, Biosurfactant.

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