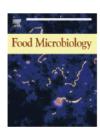
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Short communication

## Variability in the adaptive acid tolerance response phenotype of Salmonella enterica strains



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## ABSTRACT

The objective of this study was the assessment of the stationary-phase, low-pH-inducible acid tolerance response (ATR) of different Salmonella enterica strains. For this purpose, 30 strains of the pathogen were grown in tryptone soy broth in the absence (non-adapted cultures) and presence (1% w/v; acid-adapted cultures) of glucose, and then subjected to 4-h acid challenge trials at pH 3.0. Surviving populations of each strain were determined at 1-h intervals, and the Weibull model was fitted to the derived microbiological data. Extensive variability in the acid stress responses of the tested S. enterica strains was observed, with the total population reductions (log CFU/ml) attained in 4 h of acid challenge ranging from 0.9 to 5.5 and from 0.6 to 7.0 for the non-adapted and acid-adapted cultures, respectively. As demonstrated by the model scale parameter  $\hat{\rho}$  and shape parameter p, the effect of acid adaptation on the inactivation curves was strain-specific. Although acid adaptation resulted in enhanced acid survival for the majority of the tested strains, there were strains exhibiting similar or decreased acid resistance compared to their non-adapted counterparts. Moreover, acid adaptation appeared to decrease the strain variability of  $\delta$  whereas increasing the strain variability of p: the coefficient of variation of  $\delta$  among the tested strains was 97.2 and 54.9% for the non-adapted and acid-adapted cultures, respectively, while the corresponding values for p were 12.7 and 48.1%. The data of the present study, which is the first one to systematically evaluate the adaptive ATR of multiple S. enterica strains, clearly demonstrate that this phenotype (attempted to be induced by growing the pathogen in the presence of glucose) is straindependent.

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