Association between intake of antacids and variance in acid tolerance for clinical isolates of *Salmonella enteric*

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Consumption of antacids is a recognized risk factor for salmonellosis, and like all bacteria, *Salmonella enterica* displays a range of acid tolerance depending on strains tested and growth conditions. If normal stomach acid is a barrier to *Salmonella* survival, then absence of antacid exposure might act as a "filter" to identify clinical strains of *Salmonella* that are more acid tolerant compared with *Salmonella* isolates from antacid users; the latter should include both acid tolerant and intolerant strains of *Salmonella*. This leads to the hypothesis that *Salmonella* obtained from non-antacid takers will have a lower variance in acid tolerance compared with *Salmonella* isolates obtained from people who were taking antacids at the time of infection. Using data from a concurrent study, we identified 70 isolates of *Salmonella* from clinical cases of salmonellosis in Washington State (stratified random design, grouped by serovar). In total, 28 isolates were identified from people with self-reported exposure to antacids during the month prior to illness and 42 isolates from people with no antacid exposure during the month prior to illness. Each isolate was subjected to acid stress tests where an aliquot of overnight culture was incubated in acidic buffer (pH 2.6) for 0, 30, 60, 120 and 240 min after which we calculated colony forming units (CFU). From the 70 isolates 19 have been tested to date; 8 associated with prior antacid exposure and 11associated with no prior exposure. The averages of the CFU counts were calculated for all 4 time points. While the pattern of variance for 30 and 240 min acid exposure is consistent with our hypothesis, there was no significant difference in the two groups both for mean CFU counts after acid exposure (Student t test, $P>0.05$) and the variance in CFU counts (F-ratio test, $P>0.05$). These preliminary findings indicate that while antacid use is a risk factor for human salmonellosis, lower stomach pH probably does not select for a subset of more acid-tolerant *Salmonella*.