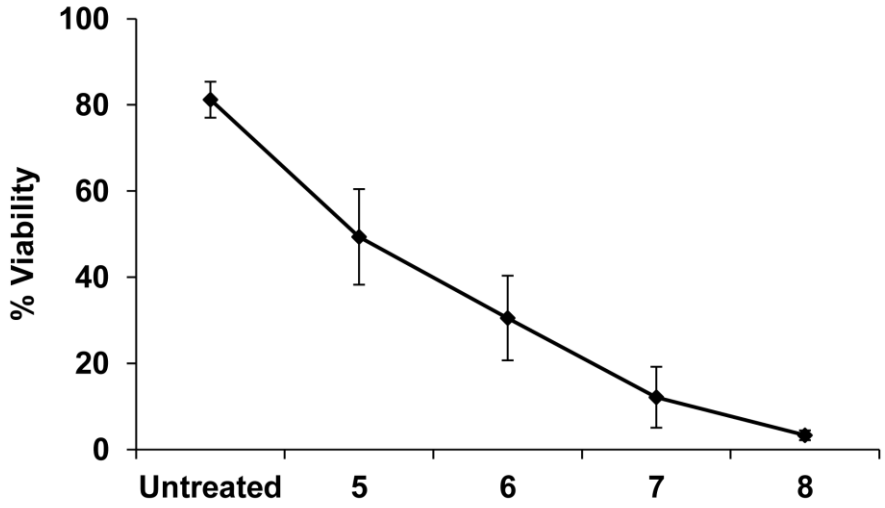

Fig. S1. *S. aureus* has dose dependent effects on keratinocyte viability. Undifferentiated untreated cells had a viability of 81.2 ± 4.1%. Cells exposed to 10^5cfu/ml *S. aureus* had a viability of 49.4 ± 11.1%. Cells exposed to 10^6 cfu/ml *S. aureus* had a viability of 30.5 ± 9.8 %. Cells exposed to 10^7cfu/ml *S. aureus* had a viability of 12.1 ± 1.1% while cells exposed to 10^8cfu/ml *S. aureus* had a viability of 3.3 ± 1.1%. Linear regression analysis confirmed a linear relationship between concentration and percentage viability ($p < 0.001$). Results are expressed as mean ± SEM.

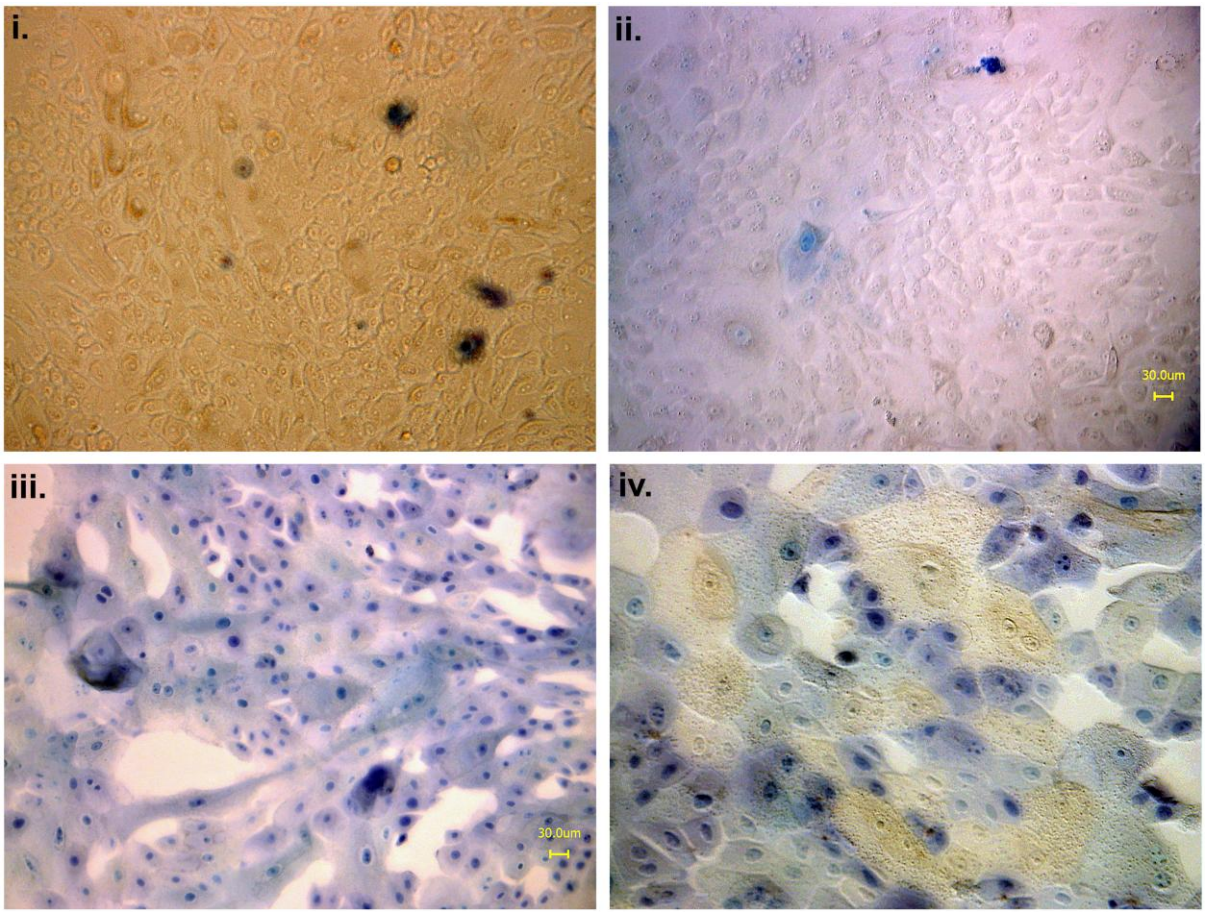

Fig. S2. Lactobacilli protect undifferentiated keratinocytes from the cytotoxic effects of *S. aureus*. Representative images of infected cells stained with trypan blue (Magnification x 200). i) No treatment, ii) infected with 10^8cfu/ml *L. reuteri*, iii) exposed to 10^8cfu/ml *S. aureus*, or iv) infected with 10^8cfu/ml *S. aureus* and 10^8cfu/ml *L. reuteri* simultaneously. Images were optimized for contrast and exposure using Adobe Photoshop 3.

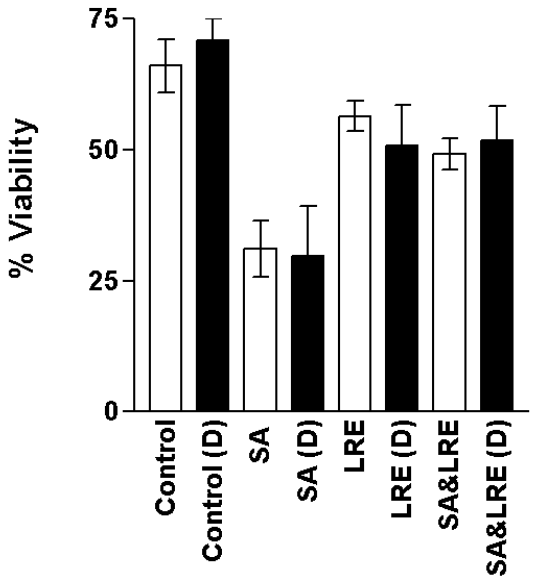

Figure S3. The viability of undifferentiated NHEK and differentiated NHEK exposed to different combinations of bacteria was not significantly different. Untreated undifferentiated NHEK had similar viabilities to untreated differentiating NHEK (66 ± 0.8 % and 71 ± 2.8 % respectively). *S.aureus* treated NHEK had similar viabilities regardless of whether they were undifferentiated (SA) or differentiating (SA (D)) (31.1 ± 3.3 % and 29.6 ± 9.9 % respectively). *L. reuteri* treated NHEK also had similar viabilities regardless of whether they were undifferentiated (LRE) or differentiating (LRE (D)) (56.5 ± 3.2 % and 50.7 ± 10.6 %). Finally, cells exposed to *S. aureus* and *L. reuteri* simultaneously had similar viabilities whether undifferentiated (SA& LRE) or differentiating (SA&LRE (D)) (49.2 ± 1.4 % and 51.7 ± 7.5 % respectively). P>0.05 in all cases. Results are expressed as the mean ± SEM.

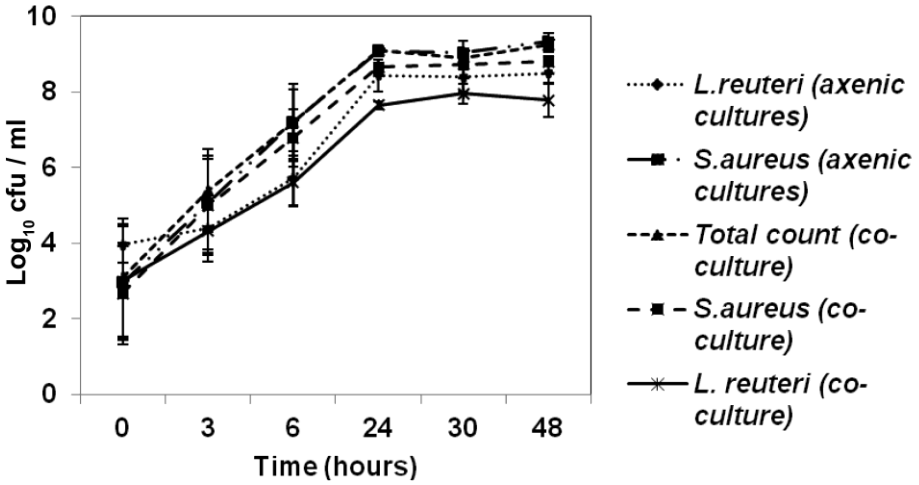

Fig. S4. *L. reuteri* does not inhibit the growth of *S. aureus* in co-culture. Competition assay revealing no significant difference between groups over time (P=0.146).

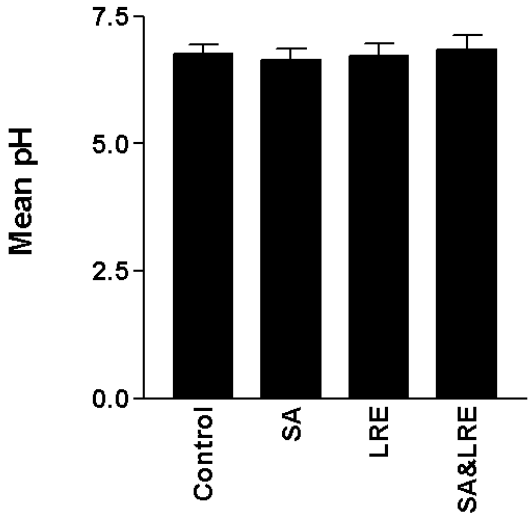

Figure S5. *L. reuteri* did not change the pH of the cell culture supernatant. Mean pH of cell cultures that were untreated (buffered, 6.8 ± 0.2), infected with 10^6cfu/ml *S. aureus* (SA) (6.7 ± 0.2), 10^8cfu/ml *L. reuteri* (LRE)(6.8 ± 0.3) and cultures infected with both (SA&LRE)(6.9 ± 0.3). There was no significant difference between groups (P=0.9). Results are expressed as the mean ± SEM.

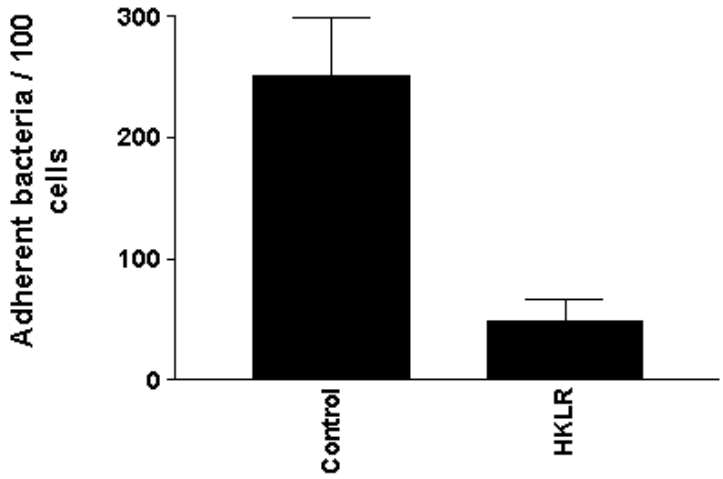

Figure S6. Heat killed *L. reuteri* does not adhere to keratinocytes as well as live *L. reuteri*. Untreated control *L. reuteri* adhered significantly better to keratinocytes (250 ± 48 bacteria/100 cells) compared to heat killed *L. reuteri* (HKLR)(48 ± 19 bacteria/100 cells) (P=0.04). Results are expressed as the mean ± SEM.