**Supporting information**

## Selective Bactericidal Activity of Divalent Metal Salts of Lauric Acid

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**Table S1.** Bactericidal activities of the lauric acid and its divalent metal salts.

| | | *S. aureus* | | | |
|---|---|---|---|---|---|
| | | 0 h | 1 h | 3 h | 24 h |
| Lauric acid | Average | 5.1 | 3.0 | <1 | <1 |
| | Standard deviation | 0.4 | 1.0 | 0.0 | 0.0 |
| Mg salt | Average | 5.4 | 2.9 | 0.9 | <1 |
| | Standard deviation | 0.2 | 0.8 | 1.5 | 0.0 |
| Ca salt | Average | 5.5 | 4.3 | 2.5 | <1 |
| | Standard deviation | 0.3 | 0.9 | 2.3 | 0.0 |
| Mn salt | Average | 5.6 | <1 | <1 | <1 |
| | Standard deviation | 0.0 | 0.0 | 0.0 | 0.0 |
| Co salt | Average | 5.6 | 2.4 | <1 | <1 |
| | Standard deviation | 0.1 | 0.5 | 0.0 | 0.0 |
| Ni salt | Average | 5.5 | 2.2 | <1 | <1 |
| | Standard deviation | 0.2 | 0.2 | 0.0 | 0.0 |
| Cu salt | Average | 5.6 | <1 | <1 | <1 |
| | Standard deviation | 0.1 | 0.0 | 0.0 | 0.0 |
| Zn salt | Average | 6.1 | 5.7 | 5.6 | 4.9 |
| | Standard deviation | 0.6 | 0.1 | 0.1 | 0.2 |
| | | *S. epidermidis* | | | |
| | | 0 h | 1 h | 3 h | 24 h |
| Lauric acid | Average | 5.4 | 5.3 | 5.3 | 4.8 |
| | Standard deviation | 0.0 | 0.0 | 0.0 | 0.0 |
| Mg salt | Average | 5.8 | 5.8 | 5.8 | 4.1 |
| | Standard deviation | 0.0 | 0.0 | 0.1 | 0.1 |
| Ca salt | Average | 5.7 | 5.4 | 5.4 | 5.1 |
| | Standard deviation | 0.1 | 0.1 | 0.1 | 0.3 |
| Mn salt | Average | 5.9 | 5.9 | 5.3 | 5.4 |
| | Standard deviation | 0.0 | 0.1 | 0.5 | 0.3 |
| Co salt | Average | 5.8 | 5.1 | 4.0 | <1 |
| | Standard deviation | 0.0 | 0.3 | 0.4 | 0.0 |
| Ni salt | Average | 5.8 | 5.0 | 4.0 | <1 |
| | Standard deviation | 0.0 | 0.1 | 0.5 | 0.0 |
| Cu salt | Average | 5.9 | <1 | <1 | <1 |
| | Standard deviation | 0.0 | 0.0 | 0.0 | 0.0 |
| Zn salt | Average | 5.9 | 5.8 | 5.8 | 5.5 |
| | Standard deviation | 0.0 | 0.1 | 0.0 | 0.1 |
| | | *P. acnes* | | | |
| | | 0 h | 1 h | 3 h | 24 h |
| Lauric acid | Average | 5.5 | 5.6 | 1.8 | <1 |
| | Standard deviation | 0.2 | 0.6 | 1.6 | 0.0 |
| Mg salt | Average | 5.6 | 5.5 | 5.1 | <1 |
| | Standard deviation | 0.1 | 0.0 | 0.2 | 0.0 |
| Ca salt | Average | 5.5 | 5.2 | 4.6 | 0.8 |
| | Standard deviation | 0.1 | 0.2 | 0.5 | 1.4 |
| Mn salt | Average | 5.8 | 4.5 | <1 | <1 |
| | Standard deviation | 0.1 | 0.0 | 0.0 | 0.0 |
| Co salt | Average | 5.8 | 3.7 | <1 | <1 |
| | Standard deviation | 0.1 | 0.0 | 0.0 | 0.0 |
| Ni salt | Average | 5.7 | 4.2 | <1 | <1 |
| | Standard deviation | 0.1 | 0.1 | 0.0 | 0.0 |
| Cu salt | Average | 5.9 | 5.3 | <1 | <1 |
| | Standard deviation | 0.1 | 0.2 | 0.0 | 0.0 |
| Zn salt | Average | 5.9 | 5.8 | 5.5 | 3.1 |
| | Standard deviation | 0.0 | 0.1 | 0.0 | 0.1 |

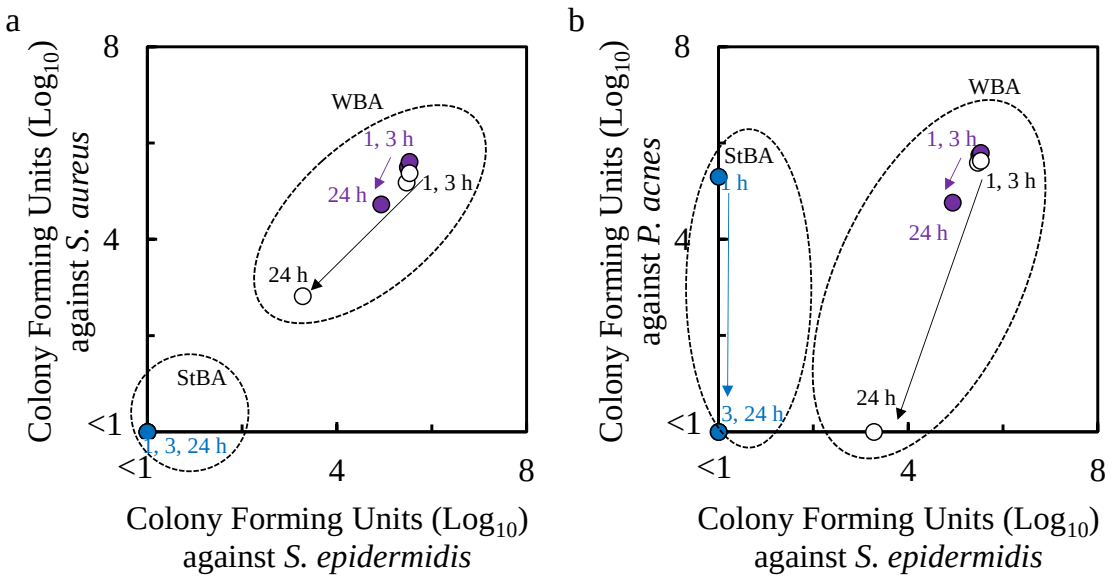


**Figure S1.** Bactericidal activities of metallic chlorides. Temporal changes of CFU for *S. aureus* and *S. epidermidis* (a) and *P. acnes* and *S. epidermidis* (b). Purple circle: $CoCl_2$; blue circle: $CuCl_2$; white circle: $ZnCl_2$.

**Table S2.** Bactericidal activities of the metallic chlorides.

| | | *S. aureus* | | | |
|---|---|---|---|---|---|
| | | 0 h | 1 h | 3 h | 24 h |
| Co salt | Average | 5.7 | 5.6 | 5.5 | 4.7 |
| | Standard deviation | 0.0 | 0.1 | 0.1 | 0.3 |
| Ni salt | Average | 5.7 | 5.5 | 5.4 | 4.2 |
| | Standard deviation | 0.1 | 0.1 | 0.1 | 0.3 |
| Cu salt | Average | 5.7 | <1 | <1 | <1 |
| | Standard deviation | 0.1 | 0.0 | 0.0 | 0.0 |
| Zn salt | Average | 5.6 | 5.4 | 5.2 | 2.8 |
| | Standard deviation | 0.1 | 0.1 | 0.0 | 0.6 |
| | | *S. epidermidis* | | | |
| | | 0 h | 1 h | 3 h | 24 h |
| Co salt | Average | 5.5 | 5.5 | 5.5 | 4.9 |
| | Standard deviation | 0.0 | 0.1 | 0.0 | 0.1 |
| Ni salt | Average | 5.5 | 5.3 | 5.2 | 4.2 |
| | Standard deviation | 0.0 | 0.0 | 0.0 | 0.2 |
| Cu salt | Average | 5.5 | <1 | <1 | <1 |
| | Standard deviation | 0.0 | 0.0 | 0.0 | 0.0 |
| Zn salt | Average | 5.5 | 5.5 | 5.5 | 3.3 |
| | Standard deviation | 0.0 | 0.1 | 0.0 | 0.2 |
| | | *P. acnes* | | | |
| | | 0 h | 1 h | 3 h | 24 h |
| Co salt | Average | 5.9 | 5.8 | 5.7 | 4.8 |
| | Standard deviation | 0.1 | 0.1 | 0.1 | 0.2 |
| Ni salt | Average | 5.9 | 5.8 | 5.7 | 3.8 |
| | Standard deviation | 0.0 | 0.0 | 0.1 | 0.2 |
| Cu salt | Average | 5.7 | 5.3 | <1 | <1 |
| | Standard deviation | 0.0 | 0.1 | 0.0 | 0.0 |
| Zn salt | Average | 5.7 | 5.6 | 5.6 | <1 |
| | Standard deviation | 0.0 | 0.0 | 0.1 | 0.0 |

**Table S3.** The surface tension of the solubility of metal salts of lauric acid in 2wt% aqueous ethanol at 25°C and 50% humidity. The metal salt concentration was 0.1 g $L^{-1}$.

| | Mg salt | Ca salt | Mn salt | Co salt | Ni salt | Cu salt | Zn salt | Water |
|---|---|---|---|---|---|---|---|---|
| Surface tension / mN $m^{-1}$ | 70.8±2.0 | 71.2±1.3 | 72.7±1.4 | 70.6±1.2 | 71.7±1.2 | 71.4±1.8 | 72.1±1.7 | 71.7±3.2 |