

## Antimicrobial Properties of Copper in Gram-Negative and Gram-Positive Bacteria

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**Abstract :** For centuries humans have used the antimicrobial properties of copper to their advantage. Yet, after all these years the underlying mechanisms of copper mediated cell death in various microbes remain unclear. We had explored the hypothesis that copper mediated increased levels of lipid peroxidation in the membrane fatty acids is responsible for increased killing in *Escherichia coli*. In this study we show that in both gram positive (*Staphylococcus aureus*) and gram negative (*Pseudomonas aeruginosa*) bacteria there is a strong correlation between copper mediated cell death and increased levels of lipid peroxidation. Interestingly, the non-spore forming gram positive bacteria as well as gram negative bacteria show similar patterns of cell death, increased levels of lipid peroxidation, as well as genomic DNA degradation, however there is some difference in loss in membrane integrity upon exposure to copper alloy surface.

**Keywords :** antimicrobial, copper, gram positive, gram negative

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