

# Metal-chelating antioxidant peptides - Biosensor screening methods as alternatives to the ferrozine assay

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## Abstract

Preventing metal-catalyzed lipid oxidation in food products, which decreases nutritional value and sensory quality, is crucial in the food industry. This is typically achieved through the use of metal-chelating molecules. While the ferrozine assay is widely used to screen protein hydrolysates for metal chelating activity, it has proven difficult to use with pure peptides. This study evaluates the potential of Surface Plasmon Resonance (SPR) and Electrically Switchable Nanolever Technology (switchSENSE®) as alternative screening methods. Unfortunately, solubility issues and large standard deviations precluded a direct correlation between the ferrozine assay and these biosensor techniques. Both techniques, however, were able to quantitatively distinguish between two peptides with very similar sequences despite the absence of a correlation between dissociation constants determined by SPR and switchSENSE®. This study highlights the potential of SPR and switchSENSE® for screening the metal chelating activity of pure peptides, advancing the understanding of peptide-metal ion interactions.

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Ferrozine paper.docx available at <https://authorea.com/users/763583/articles/740995-metal-chelating-antioxidant-peptides-biosensor-screening-methods-as-alternatives-to-the-ferrozine-assay>