

## **Abstract**

Polyphenolic compounds are widely touted as potent antioxidants; however, studies have shown that their oxidation may result in the generation of hydrogen peroxide,  $H_2O_2$ , a reactive oxygen species (ROS). ROS lead to decreased oxidative stability in lipid-based foods, including dispersed lipid systems (e.g. oil-in-water emulsions). The consequences of aqueous phase ROS on the stability of food lipids is still not fully understood, but the incorporation of proteins as antioxidants may help inhibit lipid oxidation promoted by  $H_2O_2$ . Methionine residues are known peroxide scavengers, and may play a key role as antioxidants in polyphenol-rich foods; however, the overall antioxidant activity may be a function of solvent accessibility of methionine residues. We propose to investigate the extent to which methionine contributes to the peroxide scavenging capacity of proteins in foods by blocking solvent accessible methionine residues, and by increasing the number of solvent accessible methionine residues in a model protein. Transfer of this knowledge to industry will allow producers to offer polyphenol rich foods in a wider range of products (e.g., dairy products, sauces, mayonnaise, omega-3 beverage emulsions), thus benefiting the health of consumers and giving food manufacturers more ways to add value to their products.