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# Microstructure and antioxidative activities of natural antioxidants in the presence of different proteins in a food model

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Sunflower is very rich in Poly-Unsaturated Fatty Acid (PUFA) having a health advantage but very susceptible to oxidation. Methanol phenolics compounds extracted from virgin olive oil, valued and stable oil was used as an additive for the oxidative stability of sunflower oil-in water emulsions. Primary and secondary products of oxidation were measured at an accelerated temperature of 60º during storage. Microstructure of the emulsion and the dispersion of proteins in the emulsion were observed by confocal microscopy. Ferric Reducing Antioxidant Power (FRAP) assay was carried out to determine the antioxidant activities and total polyphenol. Caffeic acid and olive oil methanolic extracts showed individual stability of emulsion although the retardation of oxidation during storage was greater with caffeic acid compared to olive oil extracts. However, the combination with proteins increased the antioxidative activity of both caffeic acid and olive oil phenol extract even though the individual proteins showed a very low antioxidant effect in the emulsion. Both BSA and gelatin increased the antioxidative activity of the phenolic compounds but it was observed that BSA had a stronger synergistic effect than gelatin.

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