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Stability of encapsulated β -carotene during baking

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Bioactive compounds are nutritional constituents that typically occur in small quantities in foods. These compounds have been investigated for their biological effects that could potentially protect against cardiovascular pathology, cancer risk, inflammation, immune suppression, bone problems, neurological damage, problems associated with the gastrointestinal tract, and hormone-related problems, besides actively promoting good all-around health and general well-being. Although there are several studies about encapsulation of bioactive compounds, the stability of these encapsulated bio-actives in most real food systems and food processing environments is still not known. The aim of this study was to encapsulate β -carotene by using two different emulsions and to analyze the stability of encapsulated β -carotene during baking by adding them to bread dough formulation. β -carotene is a strongly colored red-orange bioactive compound abundant in plants and fruits, and is a precursor of vitamin A. β -carotene is mostly used as a natural food color additive, and lately, it is becoming popular for functional foods production because of its antioxidant properties. But its use is limited due to its low heat stability. Two different emulsions were used as a β -carotene carrier: the first emulsion was prepared with Tween20 emulsifier, and the second one was a Pickering emulsion prepared with starch. The emulsions were added to the bread dough, and the samples were baked in a conventional oven for 10 minutes. Color measurements and confocal imaging were performed before and after baking. The results showed that there was no significant difference between the color measurements for dough and bread samples for both emulsion types. Imaging results showed that the samples loaded with Pickering emulsion had more signal than the other emulsion for bread samples.

Biography

Nadide Seyhun is a Food Engineer and working as an Assistant Professor at Kocaeli University, Turkey. She got her PhD degree on Food Engineering from Middle East Technical University, Ankara, Turkey. She mostly worked on novel food processing technologies (microwave heating, infrared heating, ohmic heating). She recently completed one-year Postdoctoral study on encapsulation of bioactive compounds at UC Davis, CA, USA at Dr. Nitin's lab.

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