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Gel properties of acidifying nanofiltered and evaporated milk protein concentrates at different temperatures

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The gel properties of nanofiltered milk protein concentrate (NF-MPC) and evaporated milk protein concentrate (EP-MPC) was compared at different temperatures. The NF-MPC and EP-MPC samples were gelled at 25, 30, 35, 40, and 45°C with glucono-δ-lactone (GDL) respectively. The rheological properties (storage modulus and loss tangent), firmness, the degree of whey separation, and the microstructure of EP-MPC and NF-MPC gels were determined. With increasing gelation temperature from 25 to 45°C, gelation time was significantly shortened and the pH of gelation point was slowly increased. The differences in gel properties between NF-MPC and EP-MPC were significant. EP-MPC formed strong gel networks as well as had the much higher storage modulus (G') and firmness (except for the 25°C sample) and lower degree of whey separation than gels formed by NF-MPC. The nearly identical maximum in loss tangent (tan δ) and similar microstructure were observed in both NF-MPC and EP-MPC gels at the same gelation temperatures. In summary, our results clearly demonstrated that EP-MPC has superior gel properties compared with NF-MPC, but it needs further study on the NF-MPC gel properties with the preheat treatment or calcium addition in practical application.

Biography

Yan Li is working as Associate Professor at School of Food and Chemical Engineering Beijing Technology and Business University. She is mainly engaged in dairy processing technology research and In-charge of one project founded by National Science Foundation (31401517). She participated in projects like "Eleventh five-year", "Twelfth five-year" science and technology support plan and the projects of National Science Foundation.

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