Food Control 106 (2019) 106700

Contents lists available at ScienceDirect

Food Control

journal homepage: www.elsevier.com/locate/foodcont

Letter to Editor

Antimicrobial and antioxidant efficiency of nano emulsion-based edible coating containing ginger (*Zingiber officinale*) essential oil and its effect on safety and quality attributes of chicken breast fillets

Dear Editor,

With reference to the above article, I would like to mention that essential oil Nano emulsion was first fabricated by emulsification methods. It was then added into the coating solutions and mixed by constant stirring. In the next stage, the essential oil Nano emulsion was mixed vigorously using an Ultra Turrax T25 to achieve a unified solution (Donsì et al., 2015b; Severino et al., 2014).

Vigorous stirring could cause partial disruption of biopolymers in the coating solution leading to the creation of new surface areas. In the absence of sufficient emulsifiers, the newly formed droplets would re-join and form larger particles. This process is called recoalescence

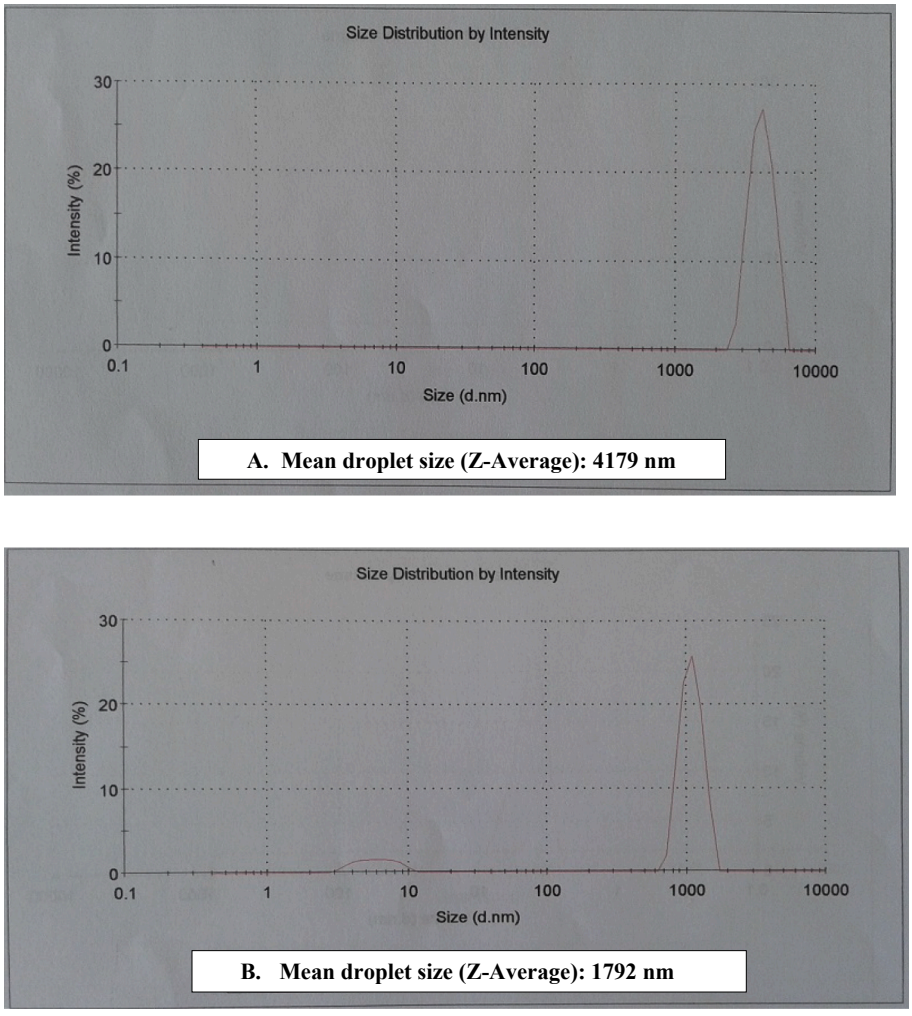

Fig. 1. Value of the droplet size distribution of chitosan (A) and sonicated chitosan with Tween 80 (ultra-sonicated at 50% amplitude, for 6 min time (45 S pulse and 15 S rest)) expressed by intensity.

https://doi.org/10.1016/j.foodcont.2019.06.026
Received 27 October 2018; Received in revised form 29 March 2019; Accepted 9 June 2019
Available online 13 June 2019

(Jafari, Assadpoor, He, & Bhandari, 2008). Due to the application of high pressure homogenization which can affect particle sizes, this study did not report the particle size after adding EOs nanoparticles into biopolymer coating solutions. Moreover, larger particles may increase the mean particle size values.

They must also apply ripening inhibitors, such as lecithin, or sunflower oil to minimize coalescence and Ostwald ripening phenomenon (Donsì, Cuomo, Marchese, & Ferrari, 2014a; Ziani, Chang, McLandsborough, & McClements, 2011). The ripening inhibitor prevents changes in Nano emulsion droplet size for long storage periods in refrigerator.

In the mentioned study, the particle size was checked at final stages of Nano emulsion preparation. In contrast with this study, other studies were carried out on Nano emulsions by the incorporation of essential oil in coating solutions prior to sonication process (Salvia-Trujillo, Rojas-Graü, Soliva-Fortuny, & Martín-Belloso, 2013; Acevedo-Fani, Salvia-Trujillo, Rojas-Graü, & Martín-Belloso, 2015). On the other hand, a reduction in the particle size of the biopolymer, such as chitosan, can increase its inherent biological effects which were evaluated in this study (Fig. 1).

References

Acevedo-Fani, A., Salvia-Trujillo, L., Rojas-Graü, M., & Martín-Belloso, O. (2015). Edible films from essential-oil-loaded nano-emulsions: Physicochemical characterization and antimicrobial properties. *Food Hydrocolloids, 47*, 168–177.

Donsì, F., Cuomo, A., Marchese, E., & Ferrari, G. (2014a). Infusion of essential oils for food stabilization: Unraveling the role of Nano emulsion-based delivery systems on mass transfer and antimicrobial activity. *Innovative Food Science & Emerging Technologies, 22*, 212–220.

Donsì, F., Marchese, E., Maresca, P., Pataro, G., Dang Vu, K., Salmieri, S., et al. (2015b). Green beans preservation by combination of a modified chitosan based-coating containing Nano-emulsion of *Mandarin* essential oil with high pressure or pulsed light processing. *Postharvest Biology and Technology, 106*, 21–32.

Jafari, S. M., Assadpoor, E., He, Y., & Bhandari, B. (2008). Re-coalescence of emulsion droplets during high-energy emulsification. *Food Hydrocolloids, 22*, 1191–1202.

Salvia-Trujillo, L., Rojas-Graü, M. A., Soliva-Fortuny, R., & Martín-Belloso, O. (2013). Effect of processing parameters on physicochemical characteristics of micro-fluidized *lemongrass* essential oil-alginate Nano-emulsions. *Food Hydrocolloids, 30*, 401–407.

Severino, R., Dang Vu, K., Donsì, F., Salmieri, S., Ferrari, G., & Lacroix, M. (2014). Antibacterial and physical effects of modified chitosan based-coating containing Nano-emulsion of Mandarin essential oil and three non-thermal treatments against *Listeria innocua* in green beans. *International Journal of Food Microbiology, 191*, 82–88.

Ziani, K., Chang, Y. H., McLandsborough, L., & McClements, D. J. (2011). Influence of surfactant charge on antimicrobial efficacy of surfactant-stabilized thyme oil Nano emulsions. *Journal of Agricultural and Food Chemistry, 59*(11), 6247–6255.

Saeid Khanzadi
Department of Food Hygiene and Aquaculture, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran
E-mail address: khanzadi@um.ac.ir.

Mohammad Hashemi
Department of Nutrition, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
Medical Toxicology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
E-mail address: mo_hashemi@hotmail.com.

Kobra Keykhosravy*
Department of Food Hygiene and Aquaculture, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran
E-mail address: kkeykhosravy@yahoo.com.

* Corresponding author. Department of Food Hygiene and Aquaculture, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Azadi Square, Mashhad, Iran. Fax: 051- 38763852.