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Influence of Plasma on the Characteristics of Oyster Mushroom (*Pleurotus ostreatus*) Powder-Based Emulsion Gel

Doo Yeon Jung*, Azfar Ismail, Anand Kumar Sethukali, Hyun Jung Lee, and Cheorun Jo

Department of Agricultural Biotechnology, Seoul National University, Seoul, Korea

This study examined the influence of plasma on the emulsion and emulsion gel stabilized with oyster mushroom powder (OMP). The concentration of OMP and plasma condition were determined by the preliminary test. Emulsion and emulsion gel were prepared with 0, 4 and 6% of OMP (M0, M4, and M6, respectively), and 4% OMP was treated with plasma (MP4). Then, their emulsion stability, droplet size, microstructure, and textural properties were analyzed. The results showed that the addition of OMP significantly reduced the creaming index of emulsion after 24 hr, whereas plasma treatment had no effect. However, plasma treatment effectively delayed the destabilization during next 72 hr. OMP also resulted in a smaller droplet sizes of emulsion, while MP4 decreased in the proportion of large droplet sizes possibly due to plasma-induced oxidation. The smaller oil droplets were formed by polysaccharide in OMP and plasma treatment, as confirmed by confocal laser scanning microscopy. When emulsion gel was made, M0 exhibited defective textural properties, whereas addition of OMP and plasma treatment significantly enhanced the hardness and chewiness of gel. Consequently, plasma treatment on OMP-based emulsion gel may induce different characteristics of gel with excellent properties.