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UniKL Author	:	Nurul Hafifah Abdul Wahid, Nur Ain Syuhada Zamri
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Abstract	:	<p>This research aimed to improve the survivability of Lactobacillus plantarum (LP) during the microencapsulation process and simulated heat exposure by immobilization with banana peel (BP) and maltodextrins as microencapsulating agent. Different BP content of 0%, 2% and 4% and two chemical grades of maltodextrin which are chemical pure grade (Cp) and commercial grade (Com) were applied in producing the microcapsules. Significance enhancement in the microencapsulation efficiency and cell survivability after simulated heat exposure of 90 °C for 30 s was achieved via the probiotic immobilization before microencapsulation process. The 4% inclusion of BP in microencapsulated LP with Cp maltodextrin was the best samples that attained the highest cell survivability after microencapsulation and heat exposure (82.06% and 66.01%, respectively). The loss of mass was slowed down with the inclusion of higher percentage of BP. The incorporation of BP has enhanced the survivability of probiotic during microencapsulation and simulated heat exposure, thus creating an opportunity of probiotic application in high thermal processing units.</p>