

Mechanisms Leading to the Protective Behavior of Ethanol Vapour Drying of Probiotics

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Abstract : A new antisolvent vapour precipitation approach was used to make ultrafine submicron probiotic encapsulates. The approach uses ethanol vapour to precipitate submicron encapsulates within relatively large droplets. Surprisingly, the probiotics (*Lactobacillus delbrueckii* ssp. *bulgaricus*, *Streptococcus thermophilus*) showed relatively high survival even under destructive ethanolic conditions within the droplet. This unusual behaviour was deduced to be caused by the denaturation and aggregation of the milk protein forming an ethanolic protective matrix for the probiotics. Skim milk droplets which is rich in casein and contains naturally occurring minerals provided higher ethanolic protection when compared whey protein isolate and lactose droplets.

Keywords : whey, skim milk, probiotic, antisolvent, precipitation, encapsulation, denaturation, aggregation

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