

Fabrication of food grade stabilized nano emulsion: Strategy to enhance lipid digestibility and bioaccessibility

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For decades, lignans rich sesame oil has gained a lot of interest from researchers owing to its potent antioxidant and anti-inflammatory property. But the beneficial efficacy of sesame oil can't be fully achieved through traditional means of delivery due to its poor aqueous solubility [1]. To surpass the disappointing output associated with conventional mode of delivery as well as to corroborate the perception of manufacturing the bio-compatible vehicle for oral/parenteral delivery, food-grade excipients have emerged as a potential nano-delivery tool for therapeutic nutrition [2]. In this current scenario, primary objective of our venture is to fabricate soya-phospholipid stabilized nanoemulsion for the encapsulation of lignans rich sesame oil. To evade the fundamental obstacles for manufacturing oil-in-water nanoemulsion, till date researchers mostly rely on high-energy approaches [3]. But in terms of cost-effective manoeuvrability, our proposal is intended to apply the newly introduced emulsification-evaporation technique for formulating food-grade stabilized nanoemulsion. Finally, *in vitro* lipid digestibility and *in situ* cellular bioaccessibility of the nanoemulsion is performed thoroughly [4]. Compared to the conventional system, phospholipid stabilized nanoemulsion fabricated with emulsification-evaporation technique is found to possess noteworthy stability, significant lipid digestibility and promising cellular bioaccessibility most probably due to their highly negative zeta potential, small droplet diameter and large surface-area to volume ratio [5]. Our research effort is entirely engaged to find the rationale behind this unique physico-chemical virtues of nanoemulsion. The facts and facets acquired from this study would expect to elicit challenging openings as well as satisfactory possibilities in the frontier area of food and pharmaceutical industries [6] (Figure).



Keywords: Nanoemulsion, soya-phospholipid, sesame oil, emulsification-evaporation, lipid digestibility, bioaccessibility.

Hybrid Event

26th International Conference on

Food Technology & Processing

17th International Conference on

Microbial Interactions & Microbial Ecology

October 05-06, 2022

Zurich, Switzerland

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Biography

Amrita Chakraborty is currently working as a Ph.D. research scholar in the Laboratory of *Food Science and technology*, University of Calcutta. Her research effort is primarily engaged in exploring nano-lipid technology. She has more than four years of experience in the field of fabrication of *nanoemulsion*, utilization of natural resources and evaluation of the bioactivity of the fabricated nanostructure. She has about three peer-reviewed international book chapters and one review paper to her credit. Besides promising research career, she is presently serving as an Assistant Professor in the Department of Physiology, Jhargram Raj College Girls' Wing, West Bengal.

Received: April 29, 2022; **Accepted:** May 01, 2022; **Published:** October 05, 2022
