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Encapsulation of Emblicanin Rich *Emblica officinalis* Extract by Double Emulsion and its Antioxidant Stability

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Objective:

- To prepare Emblicanin rich *Emblica Officinalis* encapsulated double emulsion (EEODE)
- To protect the herbal component in inner phase
- To improve the encapsulation efficiency

Method and Results: W1/O/W2 type emulsion was prepared and checked for the effect of emulsifiers (whey protein concentrate, LM-pectin and gum Arabic), salt concentration and Emblicanin rich water soluble extract of *Emblica officinalis* (EEO) concentration in inner W1 phase and different concentration of PGPR in middle O-phase.

Sodium caseinate, WPC-80, LM-pectin, gum Arabic and sodium caseinate and pectin conjugate as well as WPC-80 and pectin conjugate were tested as emulsifiers in the outer W2 phase.

Final composition for the EEODE was: 2% NaCl and 50% EEO in the inner W1 phase, 4% PGPR in the middle O-phase and 2% LM-pectin and RO water in the outer W2 phase, using an Ultra-Turrax (W1/O at 20000, W1/O in W2 at 12,000 rpm).

Conclusion: The EEODEs have been characterized with respect to encapsulation efficiency (> 90%), viscosity (715±17.67 cP), sedimentation stability, zeta potential (-32.17±1.17 mV), particle size (D [3, 2]) and D [4, 3]) 44.35 and 72.95 µm respectively and microscopic structure (light microscopy and CSLM). Storage study data revealed that EEODE was stable up to 1 month. The antioxidant activities (DPPH, ABTS, FRAP) of EEO were also protected by encapsulation.

Significance and Impact:

- Double emulsion successfully protects the active components of herb from harsh effect of environment.
- Mask bitter taste of herb and EEODE provides better stability of herbal bioactive.
- It can be used as one of the ingredients that have a potential for application in functional foods.

Biography

Neha Chaudhary is working as a Lab Expert in Honey quality control, in Integrated beekeeping development centre, (An Indo –Israel project under Department of Horticulture), Kurukshetra, Haryana & Ph.D in Dairy Technology from National Dairy Research Institute, Karnal (2017). She has done M.Sc. in Food Technology from Guru Jambheshwar University, Hisar, Haryana (2011) & B.Sc. in Microbial and food technology from Panjab University, Chandigarh (2009). She has total 3 years of work experience in food/food product testing. She has good experience in laboratory development and documentation according to ISO 17025:2005 and Quality management system. She is a content writer for Book Chapters in Food Science and Technology in MSc E-Pathshala by UGC, India. She has publications (Research, review, popular articles) in International and National Journals, Possess excellent analytical, interpersonal relationship building and team building skills and professional ability to work in quality systems/procedures and managing resources.

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