

component. Tween 20 is a non ionic surfactant which diffuses in water and adsorbs at the interface between oil and water. With surfactant concentration of 1.0 % particle size obtained was 700.9 nm with PDI value of 0.505, which is due to the lack of sufficient surfactant coating the nanoparticles. Then, concentration of surfactant was increased to 2.5 %, particle size found was 487.4nm with PDI value of 0.375. At concentration 5.0 %, particle size increase to 535 nm with PDI value of 0.375, this increase in size is attributed to a thicker coating of the surfactant on the nanoparticle surface, and is assumed to be over and above the needed concentration to form a stable nanoparticles. Therefore, 2.5% surfactant concentration was opted for further studies. SEM and TEM micrographs of the nanoparticles show spherical morphology and distinct surfactant coating over nanoparticles. Stability studies of SLNs is under progress.

V. CONCLUSION

Carotenoids are successfully extracted from the agrowaste i.e. mandarin peels and converted into a bioengineered product i.e. solid lipid nanoparticles. Supercritical fluid extraction was found to extract carotenoids more efficiently and also it is the solvent free method which can be scaled-up easily. Mass spectra and HPLC both suggested the presence of xanthophylls, particularly β -cryptoxanthin. Electron micrographs confirmed spherical morphology of the nanoparticles. These aqueous dispersible bioengineered nutraceuticals hold promise in the development of functional foods.

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