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Encapsulation of polyphenolic antioxidants obtained from *Momordica charantia* fruit within zein/gelatin shell core fibers via coaxial electrospinning

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Abstract

This study dealt with fabricating and characterizing nano fibrillar bilayer structures encapsulated with *Momordica charantia* fruit extract. Coaxial shell core zein/ gelatin nano fiber structure was successfully produced at 20 kV, 0.5 ml/hr and 10 cm of voltage, flow rate and emitter/collector distance, respectively. The gelatin fiber was encapsulated with bitter melon extract (BME) at 5% to 15% (w/w%) loading rate. Statistical analysis of scanning electron micrographs showed the encapsulation process resulted in a non-significant ($P>0.05$) increase in average fiber diameter. Morphological analysis through transmission electron microscopy (TEM) confirmed fabrication of the bilayer structure as well as encapsulation of the extract. Furthermore, spectroscopic analysis by FTIR illustrated the formation of composite coaxial fibers through electrospinning process. However, encapsulation at various loading rates did not result in any chemical interaction between core and wall materials. Thermogravimetric graphs of

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