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Autor

APROVADO

THERMAL STABILITY OF FOLIC ACID ENCAPSULATED IN ULTRAFINE ZEIN FIBERS PRODUCED BY ELECTROSPINNING

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Categoria de apresentação
Sócio

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Folic acid
encapsulation efficiency
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Resumo (Texto Científico) - Máximo 300 palavras | Abstract (Scientific Text) - (Maximum 300 words):
Folic acid is a precursor micronutrient of several enzymatic cofactors required for nucleic acid synthesis, amino acid interconversion, and DNA, RNA and protein methylation. Folate deficiency can lead to various disorders, such as heart disease, megaloblastic anemia, Alzheimer's disease, and some types of cancer. In Brazil, wheat and corn enriched flours must contain more than 140 µg of folic acid per 100 g of flour. In general, large amounts of folic acid are added to compensate for losses during processing and/or storage. The objective of this study was to encapsulate folic acid in zein fibers produced by electrospinning to provide thermal stability to this compound. Solutions of zein alone (0%) and zein with folic acid at 0.5, 1.0, and 1.5% (w/v) were used to stretch ultrafine fibers by electrospinning. Folic acid-containing fibers were evaluated as for morphology, size, and encapsulation efficiency. Encapsulated and non-encapsulated folic acid were subjected to heating at 180°C for 45 minutes and the thermal stability was assessed by high performance liquid chromatography coupled to mass spectrometry (LC-QTOF/MS), compared to the samples not exposed to heat treatment. Fibers had homogeneous morphology, diameter ranging from 309 to 702 nm and folic acid encapsulation efficiency ranging from 82 to 92%. A reduction of 66% in non-encapsulated folic acid was observed when exposed to high temperature, while encapsulated folic acid exposed to high temperature did not vary when compared to the sample that was not exposed to the heat treatment. Thermal stability of encapsulated folic acid may be due to the interaction of folic acid with the hydrophobic amino acids of zein, which hinder its oxidation at the C9=N bond. Encapsulation using ultrafine zein fibers produced by electrospinning was efficient in providing folic acid thermal stability.

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CNPq, CAPES, PAPERG5

* Submeter trabalho para análise de Periódico Científico Internacional de Alto Impacto (Research International) * Trabalhos/Resumos em INGLÊS | Submit the abstract to the reviewer editor of High-Impact Journal (to be determined by the scientific committee) * Abstract in ENGLISH/ Food Research International

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