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FOLATE MICRO ENCAPSULATION USING PROTEIN AS A SHELL MATERIAL

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Proteins have been used to make capsules and shell materials for food applications. The use of protein in food applications is beneficial from the point of view of biocompatibility, non-toxicity as well as nutritional advantage. The procedures used for the preparation of protein capsules have yielded microparticles and nanoparticles. The purpose of this experiment was to develop a simple method to produce protein particles for carrying nutrients such as vitamins in food preparations. In this study, the protein was isolated from chickpeas. Based on the amphoteric property of the protein, the folate (vitamin B9) was encapsulated efficiently from a folate containing protein solution by acidification to the isoelectric point of the protein to obtain the microparticles. The encapsulation efficiency and loading capacity were calculated to be (62.19 ± 2.05) % and (10.18 ± 0.89) % respectively. The particle size of encapsulate varied in the range of 0.5-3.5 µm and SEM data confirmed this observation. The release of the folic acid was monitored at pH values ranging from 2 to 8. In all cases, a gradual zero order release kinetics was observed with maximum release after 10 hours. The encapsulated folic acid was more heat and light stable, thus the stability has been improved over the unencapsulated folic acid. Therefore the protein encapsulation is beneficial for improving the stability of folic acid in processed food items. This simple method for production of protein microparticles can be used to prepare various types of drug encapsulations.