



“Gheorghe Asachi” Technical University of Iasi, Romania



STUDY OF DIFFERENT ENCAPSULATING AGENTS FOR THE MICROENCAPSULATION OF VITAMIN B12

Ioana C. Carlan, Berta N. Estevinho*, Fernando Rocha

*LEPABE, Departamento de Engenharia Química, Faculdade de Engenharia da Universidade do Porto, Rua Dr. Roberto Frias,
4200-465 Porto, Portugal*

Abstract

Recently, the studies about vitamin B12 increased due to the high number of people who can develop vitamin B12 deficiency, namely: vegetarians, pregnant women or with vitamin B12 malabsorption. One solution to correct the low nutritional intake of vitamin B12 can be using food supplements or pharmaceuticals, based on the vitamin B12 microencapsulation. In the present research, the vitamin B12 microencapsulation and the controlled release of fresh and 4 months' storage samples of vitamin B12 microcapsules were studied. The microcapsules were prepared using a spray-drying technique, and 7 biopolymers were used as encapsulating agents: arabic gum, sodium alginate, carrageenan, maltodextrin, modified starch, xanthan and pectin. The product yield of the spray-dryer ranged from 20 to 50%. The microparticles were also characterized in terms of size and morphology. The vitamin B12 release profiles from microcapsules were assessed by spectrophotometric analysis, at 361.4 nm, in deionized water at 22°C and simulated gastric fluid at 37°C. This study showed that the vitamin B12 microcapsules, with good stability properties, can be produced with several encapsulating agents and proved the possibility of releasing the vitamin in different periods of time.

Key words: A biopolymers, encapsulating agents, microencapsulation, spray drying, vitamin B12

Received: May, 2017; Revised final: February, 2018; Accepted: March, 2018; Published in final edited form: April 2018

* Author to whom all correspondence should be addressed: e-mail: berta@fe.up.pt; Phone: +351225081678, Fax: +351225081449