

Physicochemical characterization of chitosan/agar blend gel beads prepared via the interphase method with different drying techniques.

ABSTRACT

In this study, natural and biodegradable chitosan/agar blend gel-beads were prepared via the interphase method. Agar was added to chitosan dissolved in aqueous acetic acid and stirred homogenously under a controlled temperature. With a syringe, the gel solution were added and dropped wisely to the oily phase. The gel-beads were dried at two different conditions: in the oven at 60°C, and in the freeze dryer for 12 hours. The physicochemistry of the resulting materials were subsequently characterized by fourier transforms infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and thermogravimetric analysis (TGA). FTIR results confirmed the formation of intermolecular hydrogen bonding between the amino and hydroxyl groups of chitosan and the hydroxyl groups of the agar. From the TGA results, we noticed that heat stability of the chitosan/agar blend beads was high compared to its individual components. SEM micrographs showed regular shaped chitosan beads with spherical forms and rough surfaces with pores.

Keyword: Chitosan/agar blend; Gel-bead; Interphase method; Physicochemistry.