Mod Chem Appl 2018, Volume: 06
DOI: 10.4172/2329-6798-C1-009

Delivery of doxorubicin from nano gel- calcium alginate beads

Monir Shalbafan, Golamreza Rezaei Behbehani and **Hossein Ghasemzadeh**
Imam Khomeini International University, Iran

The objective of this study was to develop a sustained release dosage form Doxorubicin (Dox) using a natural polymeric carrier prepared in a completely aqueous environment. Dox was entrapped in calcium alginate beads prepared with sodium alginate by the ionotropic nanogel method using calcium chloride as a crosslinking agent. The drug was incorporated either into preformed calcium alginate gel beads. Fourier transform infrared (FTIR), thermal analysis (TG/DTA), scanning electron microscope (SEM) studies on this system are discussed. The controlled release of Dox from Calcium alginate beads in buffer solution has been performed and monitored by UV–visible spectroscopy. The surface morphology of drug-loaded beads obtained from various percentages of polymer, $CaCl_2$ and drug were studied by using a scanning electron microscope (model JEOL JSM-6360, Japan). The beads were mounted on an appropriate stub and then coated with carbon and gold (100 and 50Å thickness respectively) sputter module in a vacuum evaporator in an argon atmosphere. The coated samples were then observed under a scanning electron microscope operated at 15 KV (fig1).The products were characterized by FTIR, TG/DTA, and SEM. The controlled release of Dox from nano gel-calcium alginate beads in buffer solution was studied by changing pH, temperature, initial concentration of Dox, and the bead composition. The release of Dox was monitored by UV–Visible spectroscopy. The results show that the *in-vitro* release of Dox can be substantially affected by temperature, and nano gel content. Incorporation of nano gel into the beads could also control the rate of drug release. The release rate of Dox from the beads can be simply regulated by changing the nano gel content. It can be concluded that the modified calcium alginate beads are suitable for delivery of Dox.

m.shalbafan2012@yahoo.com

Optimization of the clean-in-place process in storage tanks of a dairy industry

Welyton Ferreira de Freitas
ILES/ULBRA, Brazil

The variables involved in a cleaning and sanitization procedure are fundamentally time, temperature, chemical and mechanical actions. The search for the optimization of the correlation between them determines the effectiveness of the operation, and any change in value of one of them will result in a system rearrangement. Whereas, some concepts such as cost reduction, process optimization and the search for continuous improvement, research rose the following question: Was it possible to optimize the process of cleaning Clean-in-place (CIP) of milk storage tanks and derivatives, reducing process parameters, maintaining efficiency and controlling chemical residual? With this line of thought, the research aimed to optimize the CIP process of milk storage tanks and derived from a dairy industry. The methodology was to optimize process parameters such as reducing the concentration of chemicals used, reducing the rinsing time, and display test deployment chemical waste. It was possible to first reduce the concentrations of chemicals used solutions (alkaline and acid) in 0.5%, representing an annual savings forecast with chemical approximately R$ 38 thousand. It was also possible to reduce some rinses times within the process that drawing a direct line to the flow of the rinse pump and the arithmetic mean of cleanups; we estimated annual savings of 84 million, 840 thousand liters of water. With the implementation of residual chemical indicator test, the process has become safer, because any alkaline residue or acid that the rinsing step cannot be removed will be indicated in the residual test.

welyton.qmc@hotmail.com