

Chitosan Films Containing Nisin for Food Packaging Applications

Abstract

Due to growing incidences of food borne illness, outbreaks and product recalls in recent years, food safety is gaining increasing attention from the food industry and government organizations alike. Antimicrobials have been used to inhibit the growth of pathogenic and spoilage bacteria, thereby enhancing safety and extending the shelf-life of commercial foods. Nisin is a naturally produced bacteriocin that has generally regarded as safe (GRAS) status, and is a very effective antimicrobial against gram positive bacteria. Studies have shown that when nisin is directly incorporated into certain foods, it loses its activity over time due to binding interactions with proteins and fat. Packaging films containing antimicrobials that can be engineered to generate a targeted release over time, will ensure optimal dosage on the food surface, and prevent losses due to interaction with other compounds. The proposed research is aimed at developing and characterizing a chitosan based film matrix for release of nisin in to an aqueous system, and understanding the factors that govern the kinetics of nisin release from these films, as well as validating its antimicrobial efficacy on a typical high-moisture food.