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Temperature buffering capacity of silk hydrogel: A useful packaging materialLiang Zhao^{1,2}, Yu Li^{1,2}, Hao Wang^{1,2}, Jie Luo^{1,3}, Guolin Song^{1,*}, Guoyi Tang^{1,*}

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Abstract: The n-octadecane incorporated silk hydrogel is developed by the gelation of an o/w emulsion made of n-octadecane and the aqueous silk solution acting as the oil and water phases, respectively. SEM images show that n-octadecane grains can be clearly observed in the pores of the lyophilized hydrogel, which indicates the successful embedment of n-octadecane in the composite hydrogel. Furthermore, the composite hydrogel exhibits good water absorption capability and thermal regulation capacity. Therefore the silk composite hydrogel can be a promising candidate as the potential packaging structures for temperature sensitive materials.

Keywords: Biomaterials; Silk hydrogel; Phase change materials; Thermal properties; Packaging materials

1. Introduction

Packaging with the efficient temperature buffering capacity for the preservation and transportation of temperature sensitive materials (TSM) including beverages, pharmaceutical products, blood derivatives and others has been highly desirable [1]. The incorporation of phase change materials (PCMs) into the packaging

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