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肉桂油/海藻酸钠薄膜物理特性和抗菌性能分析

Physical and antimicrobial properties of cinnamon oil/alginate film

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中文摘要:

为了研究开发新型可降解抗菌包装材料,该文以添加不同体积肉桂油到海藻酸钠膜液中制成的肉桂油/海藻酸钠抗菌薄膜为研究对象,比较分析肉桂油添加量对肉桂油/海藻酸钠薄膜厚度、透光率、色泽和水蒸气透过率等物理特性的影响,同时,考察其对薄膜的抗菌性能的影响。膜液中肉桂油体积分数在0~1.0%时,薄膜厚度无明显变化,体积分数为1.2%时,薄膜厚度显著增加。随着肉桂油体积分数的增加,薄膜的透光率显著降低,薄膜水蒸气透过系数增大。肉桂油对薄膜色泽影响显著,随着肉桂油添加量的增加,薄膜色泽值a和b呈显著增加趋势。膜液中肉桂油体积分数为0.8%时,薄膜抗菌能力显著增强。研究结果表明,当膜液中肉桂油体积分数为0.8%时,薄膜具有较好的抗菌效果和物理性能。该研究可为肉桂油/海藻酸钠可降解抗菌薄膜生产工艺参数的进一步优化提供参考。

英文摘要:

In order to study new biodegradable antimicrobial packaging materials, the antimicrobial films were prepared by incorporated different volume fraction cinnamon oil into alginate solution, and then the physical properties of film thickness, transparency (T), color, water vapor permeability (WVP) and antimicrobial properties were studied. The film thickness had nearly not changed when the volume fraction of cinnamon oil in the film forming solution increased from 0 to 1.0%, but increased significantly when the volume fraction of cinnamon oil reached to 1.2%. The film transparency decreased significantly but WVP increased with the increase of cinnamon oil. Cinnamon oil had an obviously effect on the film color, with the significant increase of a and b values. The film displayed obvious antimicrobial efficiency, when the volume fraction of cinnamon oil in the film forming solution arrived at 0.8%. In conclusion, the film made by alginate film forming solution with the volume fraction of cinnamon oil of 0.8% was of better antimicrobial efficiency and better physical properties. The study can provide a reference for the processing of biodegradable antimicrobial cinnamon oil/alginate film.

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