

农产品辐照研究 · 食品科学

超高压加工鲜切苹果片的色变动态特性

林怡, 朱瑞, 毛明, 张红敏, 于勇, 和劲松, 朱松明

浙江大学生物系统工程与食品科学学院, 浙江 杭州 310058

摘要: 以红富士和冰糖心2种苹果为试材,研究0、200、300、400和500MPa超高压处理对鲜切苹果片的色变动态特性。结果表明,超高压处理能显著抑制鲜切苹果片在空气中的色变速率。采用4种三色值组合( $\Delta L^*a^*/b^*$ 、 $\Delta L^*a^*b^*$ 、 $\Delta(\Delta E)$ 和 $\Delta W.I.$ )作为色变指标研究鲜切苹果片的色变动态特性,结果表明,超高压处理和未处理的鲜切苹果片的各色变指标均随时间呈线性变化,鲜切苹果片的色变符合零级动力学反应。通过对三色值组合的优选,色变指标 $\Delta L^*a^*/b^*$ 被选作反应压力对色变影响的最佳指标,并在此基础上建立了色变指标( $\Delta L^*a^*/b^*$ )与压力(P)的关系模型。模型表明,400MPa为超高压加工鲜切水果片的较优压力。

关键词: 超高压 鲜切苹果片 色变 动态特性

DISCOLORATION DYNAMIC CHARACTERISTICS OF APPLE SLICES AFTER ULTRA-HIGH TREATMENT

LIN Yi, ZHU Rui, MAO Ming, ZHANG Hong-min, YU Yong, HE Jing-song, ZHU Song-ming

College of Biosystems Engineering and Food Science, Zhejiang University, Hangzhou, Zhejiang 310058

Abstract: The color-changing dynamic characteristics of fresh apple slices were studied with two cultivars (Fuji and Candy-heart) apple after different levels of ultra-high pressure treatment (0, 200, 300, 400 and 500MPa). Results showed that, the color-changing rate of apple slices were significantly inhibited by ultra-high pressure treatment compared to untreated ones. Four kinds of combination of tristimulus index ( $L^*a^*$  and  $b^*$ ), including  $\Delta L^*a^*/b^*$ ,  $\Delta L^*a^*b^*$ ,  $\Delta(\Delta E)$  and  $\Delta W.I.$ , were investigated to present slices color change. Each combination index showed a linear change with time. This suggested that the color-changing of fresh apple slices conformed to zero-order kinetic reaction. Specially,  $\Delta L^*a^*/b^*$  was selected to be the better combination index to describe the effect of pressure-treated on color-changing. Basing on  $\Delta L^*a^*/b^*$ , a model were established to study the relation between the color-changing( $\Delta L^*a^*/b^*$ ) and pressure (P). From this model, 400MPa was the optimal pressure for apple sliced processing.

Keywords: ultra-high pressure fresh apple slice color-changing dynamic characteristics

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通讯作者: 于勇(1978-),男,山东青岛人,博士,副教授,主要从事农产品加工及品质检测技术研究。Tel:0571-88982181;E-mail:yyuzju@zju.edu.cn

作者简介:

作者Email: yyuzju@zju.edu.cn

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