

罐制过程中荸荠质构变化及其与淀粉特性的关系

Texture changes of Chinese water chestnut (*Eleocharis dulcis*) during canning and the relationship between texture and starch properties

投稿时间: 2006-4-29 最后修改时间: 2007-1-11

稿件编号: 20070444

中文关键词: 荸荠; 质构; 膨胀力; 凝胶质构; 快速黏度分析(RVA)

英文关键词: Chinese water chestnut; texture; swelling power; gel texture; Rapid Visco Analysis(RVA)

基金项目: 江苏省科技攻关项目(BG2005323)资助

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中文摘要:

该文通过比较荸荠罐制过程不同阶段的质地结构,研究了荸荠罐制过程中质构变化的规律及其与含水率的关系,比较了预煮、排气和杀菌三个受热过程后的质构,结果表明荸荠质构中弹性性质(脆度、硬度和黏着性)和塑性性质(凝聚性和回复性)在受热后有不同的变化,弹性性质参数值在排气过程中有所回升,塑性性质参数值则在整个过程中全部呈下降趋势;含水率与黏着性呈极显著的负相关,与凝聚性和回复性呈显著正相关。同时对荸荠质构变化与淀粉特性的相关性做了分析,探讨通过改变淀粉特性以达到较好质构的可行性。研究发现荸荠淀粉的膨胀力(Swell Power, SP)、淀粉凝胶质构和淀粉快速黏度分析(Rapid Visco Analysis, RVA)谱中的崩解值与荸荠的各项质构参数的相关性均达到显著或极显著水平。可根据荸荠质构特性的变化规律,通过控制不同的受热过程,尤其是预煮,使之得到具有较好质构的产品。另外,改变淀粉特性也可改善产品质构。

英文摘要:

The texture changes of Chinese water chestnut (*Eleocharis dulcis*) during canning and the relationship between texture and water content were studied during different processing periods. The texture parameters of Chinese water chestnut were analyzed during pre-cooking, evaporation and sterilization, respectively. The results show that elastic nature (fracturability, hardness and adhesiveness) and plastic nature (cohesiveness and resilience) of Chinese water chestnut have different responses to thermal processing. The elastic properties rise back during evaporation processing. However, the plastic properties decreased during the whole processing. In the meanwhile, water content show significant negative correlation with adhesiveness, and correlate positively with all plastic parameters. The relationship between changes of Chinese water chestnut texture and starch properties was analyzed to find the feasibility of obtaining good product texture by changing starch properties. It is observed that swelling power, gel properties and setback of Rapid Visco Analysis (RVA) are significantly correlate with different texture parameters. The conclusion is that it is possible to obtain good product texture through controlling different thermal processing, especially pre-cooking, or by changing starch properties.

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