胡萝卜过热蒸汽膨化干燥工艺优化 Optimization of Super Heated Stream Puffing Drying Technology for Carrot

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关键词： 胡萝卜 过热蒸汽膨化 干燥 工艺优化

摘 要： 以胡萝卜为原料，采用三因素二次正交旋转组合设计，研究了预脱水的胡萝卜含水率、过热蒸汽温度和滞留时间对膨化胡萝卜比容以及产品复水率的影响。这3个因素的影响均达到显著水平，过长的滞留时间可增加比容，但极大降低产品复水率。优化的过热蒸汽膨化工艺条件为：预脱水的胡萝卜含水率23%，过热蒸汽温度150℃，滞留时间50s。过热蒸汽膨化干燥的胡萝卜收缩较小、复水率高、硬度适中、品质好。过热蒸汽膨化干燥胡萝卜较热风干燥效率高，干燥时间缩短近40%。 A three factors quadratic regression rotation combination design was adopted to study the effect of moisture content of pre-dried carrots, super heated stream temperature and treating time on the specific volume of puffed carrots and product rehydration ratio. Results showed that all the three factors have significant effect. Long treating time increases specific volume of puffed carrots while decreases product rehydration ratio significantly. The optimized result is 23% moisture content of pre-dried carrot, 150℃ puffing temperature and 50s treating time. Puffing dried carrot at the above condition has small a shrinkage, a high rehydration ratio, and a appropriate hardness. Super heated stream puffing drying has a higher efficiency comparing to hot air drying, which could decrease drying time near 40%.

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