

Title Microstructure changes of sodium carbonate-soluble pectin of peach by AFM during controlled atmosphere storage

Author Hong-Shun Yang, Guo-Ping Feng, Hong-Jie An and Yun-Fei Li

Citation Food Chemistry Volume 94, Issue 2, January 2006, Pages 179-192

Keyword Peach; Atomic force microscopy; Controlled atmosphere storage; Pectin; Structure

Abstract

Yellow peaches (*Prunus persicu* L. Batsch.) were stored under controlled atmospheres (CA) of 2% O₂ + 5% CO₂, 5% O₂ + 10% CO₂, 2% O₂ + 10% CO₂, 5% O₂ + 5% CO₂, and normal atmosphere at 2 °C, to investigate the effects of different concentrations of O₂ and CO₂ on the structure of a single sodium carbonate-soluble pectin (SSP) molecule. The microstructure changes, including aggregates and branches, were studied by atomic force microscopy (AFM) at initially, on the 15th and 45th day. The microstructure of SSP molecules and polymers showed that aggregates separated gradually with the storage time. The degradation took place in the linear backbone as well as in side chains. The degradation of SSP molecules was inhibited by lower O₂ and higher CO₂ concentrations. Almost all of the chains were composed of four basic units with widths of 11.719, 15.625, 19.531 and 17.578 nm, which can be visualized and calculated exactly by AFM. This indicated that parallel linkage or intertwist between the basic units was a fundamental characteristic of SSP molecules.