

**Title** Changes in the microstructure and location of some bioactive compounds in persimmons treated by high hydrostatic pressure

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### **Abstract**

Persimmon fruit are an important source of phenolic compounds, dietary fibre, and carotenoids. However, the location of these elements in the tissue is directly connected with processing techniques used. The aim of this work was to study the effect of high hydrostatic pressure (HHP) on the microstructure of persimmon fruit cv. 'Rojo Brillante' during different ripening stages and the relationship of this treatment with changes in the location of some bioactive compounds. Samples from persimmon fruit cv. 'Rojo Brillante' from two ripening stages, with and without deastringency treatment (95–98% CO<sub>2</sub>), were treated by HHP at 200 and 400 MPa during 1, 3, and 6 min. A microstructural study using cryo-scanning electron microscopy, light microscopy, and confocal laser scanning microscopy (Cryo-SEM, LM, and CLSM) was carried out. Total soluble solid (TSS) content and some textural properties were also analyzed. The microstructural study showed that application of HHP caused cell wall disruption and intracellular component dispersion throughout the tissue, together with some nutritionally interesting compounds (tannins, fibres, and carotenoids). TSS content diminished in astringent samples when HHP was applied. This was attributed to precipitation of soluble tannins, which are responsible for fruit astringency. Therefore, it might be possible to omit a deastringency treatment with CO<sub>2</sub> before HHP treatments. HHP treatments caused an overall decrease in firmness for both ripening stages and an increase in cohesiveness (TPA analysis) in the more advanced stage.