Combination of high pressure processing and heat treatment on quality and antioxidant activity of fresh-cut persimmon

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The effect of high pressure processing (HPP) in combination with heat treatment on storage quality and antioxidant activity of fresh-cut persimmon were investigated. Flesh persimmon (Diospyros kaki L., cv. ‘Hiratanenashi’) were cut and treated by HPP at 80 MPa combined with heat treatment at 40°C for 5, 10 and 15 minutes, non-treated was used as a control treatment. Then, they were stored at 5°C for 8 days. The quality determinations were measured for respiration rate, weight loss, color, flesh firmness, total soluble solid, polyphenol oxidase activity (PPO), total phenolic content (TPC) and antioxidant activity by 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity and ferric reducing antioxidant power (FRAP) assays. The result showed that HPP-treated had significantly lower respiration rate and weight loss than the non-treated. During the period evaluated, L*, C* and flesh firmness were significantly lower in HPP-treated than the non-treated. PPO activity increased during storage however HPP-treated for 5 and 10 min could reduce the PPO activity when compared with other treatments. TPC, DPPH radical scavenging activity and FRAP activity decreased during storage but HPP-treated for 5 min maintained significantly higher values of TPC, DPPH and FRAP than the other treatments. HPP (80 MPa) combined with mild heat treatment (40°C) for 5 min provides potentially beneficial maintained high antioxidant activity and reduced respiration rate, weight loss and PPO activity with only a slight translucency caused by high pressure in fresh-cut persimmon.