

Abstract

The effectiveness of heat inactivation of oxidative enzymes e.g., ascorbic acid oxidase (AAO) to stabilise vitamin C during extraction and analysis was evaluated. The influence of different sequences of performing treatments including acidification (pH 4.3 vs. pH 6.5), crushing, high temperature short time (90 °C/4 min–HTST) and low temperature long time (60 °C/40 min–LTLT) blanching on vitamin C stability in broccoli florets and stalks was also investigated. Heat inactivation of enzymes prior to matrix disruption resulted in higher vitamin C values mainly in L-ascorbic acid (L-AA) form, while lack of enzyme inactivation resulted in high vitamin C losses resulting from conversion of L-AA to dehydroascorbic acid. Various treatments and their sequence of application influenced vitamin C stability as follows: (i) crushing prior to blanching reduced vitamin C stability and (ii) in the absence of heating, acidification increased vitamin C stability (iii) blanching prior to crushing resulted in higher vitamin C retention, with HTST blanching retaining more vitamin C than LTLT blanching.