Title Degradation kinetics of colour, vitamin C and drip loss in frozen broccoli (*Brassica oleracea* L. ssp. *Italica*) during storage at isothermal and non-isothermal conditions

Author Elsa M. Gonçalves, Marta Abreu, Teresa R.S. Brandão and Cristina L.M. Silva

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Abstract

Studies were undertaken on colour CIE *L*a*b** values, vitamin C (ascorbic acid) and drip loss alterations of frozen broccoli (*Brassica oleracea* L. ssp. *Italica*) stored at isothermal (−7, −15, and −25 °C) and non-isothermal (accelerated life testing with step-stress methodology; temperature range from −30 to −5 °C) conditions. The storage temperatures were selected according to conditions that occur in the cold chain.

Frozen storage at all regimes had significant impact on all quality parameters analysed. Significant alterations in broccoli green colour, vitamin C content and drip loss were observed.

Experimental data of *h** colour degradation and drip loss (%) at isothermal conditions and at non-isothermal conditions could be modelled by zero order kinetics. A first order kinetic model was adequate for the remaining quality factors and temperature regimes. The effect of storage temperature on kinetic parameters was successfully described by the Arrhenius equation.