

**Title** Reversible degradation kinetics of vitamin C in peas during frozen storage  
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### Abstract

In this study, kinetics of ascorbic acid (AA, 2-oxo-l-threo-hexono-1,4, lactone-2,3 enediol) and dehydroascorbic acid (DHAA, threo-2,3-hexodiulosonic acid- $\gamma$ -lactone) were studied in blanched and unblanched peas during frozen storage using a first order reversible consecutive reaction model. The time-dependent changes for both AA and DHAA were strongly correlated with the kinetic model described here. Blanching resulted in 19% of reduction in  $k_1$  value (AA degradation rate constant) as compared with unblanched peas ( $0.227/\text{month} \pm 5.43 \times 10^{-3}/\text{month}$ ). The regeneration rate constant of AA ( $k_2$ ) increased approximately 26 folds for blanched peas when compared to unblanched peas ( $0.0114/\text{month} \pm 1.04 \times 10^{-3}/\text{month}$ ). Rate constant ( $k_3$ ) for the conversion of DHAA into 2,3diketogulonic acid (DKGA) in blanched peas decreased approximately 31 folds by blanching treatment. This kind of kinetic analysis may be used for better understanding the effects of processing and storage conditions on vitamin C.